BELGIAN MATHEMATICAL SOCIETY

Comité National de Mathématique CNM

C W N M

NCW Nationaal Comite voor Wiskunde

BMS-NCM NEWS: the Newsletter of the Belgian Mathematical Society and the National Committee for Mathematics

Campus Plaine c.p. 218/01,
Bld du Triomphe, B–1050 Brussels, Belgium

Website http://bms.ulb.ac.be
Newsletter F.Bastin@ulg.ac.be
Tel. F. Bastin, ULg,(32)(4) 366 94 74
Fax F. Bastin, ULg,(32)(4) 366 95 47

BMS-NCM NEWS

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No 89, September 15, 2012

Letter from the editor

Welcome to this September issue of our Newsletter!
Have a nice semester.

Regards,
Françoise

Contents

1 News from the BMS

Electronic version of the Bulletin of the BMS

We remind you that it is possible to convert your paper subscription to the Bulletin of the BMS into **the electronic version of the Bulletin.** ***If you are interested, please contact Philippe Cara by e-mail*** (pcara@vub.ac.be with bms@ulb.ac.be in cc) for details.

2 Meetings, Conferences, Lectures

2.1 September 2012

Conference in honour of Francis Buekenhout on the occasion of his 75th birthday:

Conference "Buekenhout Geometry",
Ghent University, 20-21 September 2012.

Thursday 20 September, Lecture Room "Emmy Noether", S22, Campus "De Sterre", Krijgslaan 281.

- 9:00 Coffee and thee
- 9:50 Welcome
- 10:00 Arjeh Cohen (Eindhoven): "Riemann surface models and regular maps"
- 10:55 Coffee break
- 11:10 Antonio Pasini (Siena): "Non-projective embeddings of generalized quadrangles"
- 12:10 Bernhard Muehlherr (Giessen): "Tits-indices for affine buildings"
- 13:00 Lunch break

- 15:00 Dimitri Leemans (Auckland): "Geometries constructed from the Suzuki simple groups"
- 15:55 Coffee break
- 16:10 Koen Thas (Gent): "From buildings to hyperstructures, and back"
- 17:10 Pierre-Emmanuel Caprace (Louvain-la-Neuve): "Specimens from a zoology of simple groups"
- 19:30 Social Dinner

Friday 21 September 2012, Lecture Room "Emmy Noether", S22, Campus "De Sterre", Krijgslaan 281.

- 9:00 Coffee and thee
- 9:30 Ernest Shult (Kansas): "On"Tweaking" Classical Theorems"
- 10:25 Coffee break
- 10:45 Guglielmo Lunardon (Napels): "Linear sets: genealogy and applications"
- 11:45 Peter Cameron (London): "Geometries, chamber systems, and designs"
- 12:45 Lunch break
- 14:30 Jef Thas (Gent): "Non-linear embeddings of affine planes in projective spaces"
- 15:25 Coffee break
- 15:45 Hendrik Van Maldeghem: "Twisted A2 and E6"
- 16:30 James Hirschfeld: "Curves over Finite Fields"

More information: http://cage.ugent.be/ hvm/Conf.html

2.2 October 2012

Colloquium "The Freudenthal-Tits Magic Square",
Ghent University, 19 October 2012.

Preliminary programme:

- 10:30 Hendrik Van Maldeghem (Gent): "A geometric introduction to the Magic Square"
- 11:45 John Faulkner (Charlottesville): "TBA"
- Lunch break
- 14:30 Alberto Elduque (Zaragossa): "A Freudenthal-Tits Supermagic Square"
- 15:45 Laurent Manivel (Grenoble): "TBA"

More information: http://cage.ugent.be/ hvm/Conf.html

NCM
Palace of the Academies — October 24, 2012

On Wednesday, October 24, there will be a meeting of the National Committee for Mathematics at the Palace of the Academies (http://wikimapia.org/4150153/Palace-of-Academies).

In this year of the 100th anniversary of Poincaré´s death the meeting will start by a talk of

Jean Mawhin:
Self-oscillations and limit cycles: well known and less known contributions of Poincaré.

The talk starts at 14h30, followed by a coffee break around 15h30.
Everyone is cordially invited to attend the talk and the coffee break.
Confirmation of participation is not necessary but would be appreciated (freddy.dumortier@uhasselt.be).

3 PhD theses

Categorical constructions, braidings on monoidal categories and bicrossed products of Hopf algebras

A. L. Agore
October 1, 2012, Vrije Universiteit Brussel

Promotors: S. Caenepeel (Vrije Universiteit Brussel). G. Militaru (University of Bucharest)

Summary
The thesis contains three chapters: I. *Categorical constructions for Hopf algebras and related topics*, II. *Unified products*, III. *Classifying bicrossed products of quantum groups. Deformations of a Hopf algebra and descent type theory.*

The first chapter proves that the forgetful functor from the category of Hopf algebras to the category of (bi)algebras has a right adjoint and the limits in the category of Hopf algebras are described. In particular, it is proved that the category of Hopf algebras is complete and cocomplete. Moreover, the braidings on the category of bimodules over an algebra A are investigated and several equivalent descriptions for the center of the category of bimodules over A are provided.

In the second chapter the unified product is introduced for the categories of groups and Hopf algebras as an answer to what we have called *the extending structures problem.* Equivalent descriptions for the unified product in the category of Hopf algebras are provided and a classification theorem is proven. Some properties of the unified product (such as the coquasitriangular structures) are investigated. Special cases of the unified product are also studied.

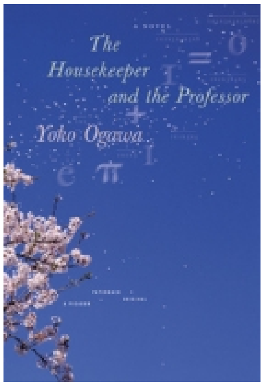
The last chapter deals with the bicrossed product of Hopf algebras. After proving some classification results, the main theme of this chapter is the so-called *bicrossed descent theory* which asks for the description and classification of all factorization A-forms of an extension E of A. A factorization A-form of E is a Hopf algebra H such that E factorizes through A and H. Let $(A, H, \triangleright, \triangleleft)$ be a matched pair of Hopf algebras. The Hopf algebra H is deformed to a new Hopf algebra H_r, using a certain type of unitary cocentral map $r : H \to A$ called a descent map of the matched pair $(A, H, \triangleright, \triangleleft)$. Let H be a given factorization A-form of E and $(A, H, \triangleright, \triangleleft)$ the associated canonical matched pair. The description of forms proves that $\mathbb{H}$ is a factorization A-form of E if and only if $\mathbb{H}$ is isomorphic to H_r, for some descent map $r : H \to A$. The classification of forms shows that there exists a bijection between the set of types of isomorphisms of all factorization A-forms of E and a cohomological type object $\mathcal{HA}^2(H, A \,|\, (\triangleright, \triangleleft))$. In particular, the factorization index of E/A is computed by the formula $[E : A]^f = |\mathcal{HA}^2(H, A \,|\, (\triangleright, \triangleleft))|$. Several examples are provided and the bicrossed descent theory for groups is derived. In particular, for a positive integer n, a formula for the numbers of types of isomorphisms of groups of order n is obtained arising from a minimal set of data: the exact factorization $S_n = S_{n-1}C_n$.

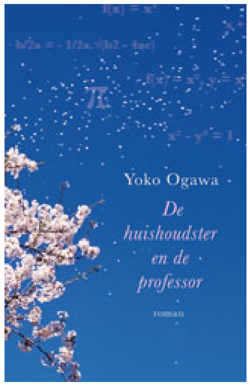
4 Miscellaneous

See the information from **I**nternational **M**athematical **U**nion at the end of this Newsletter.

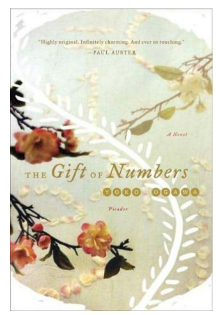
5 History, maths and art, fiction, jokes, quotations . . .

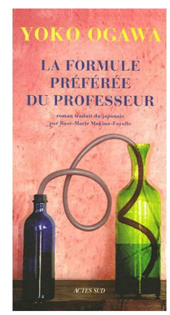
The housekeeper and the professor / De huishoudster en de professor *Yoko Ogawa*. Macmillan-Picador, 2009 (197 p.) ISBN 978-0-312-42780-1 / De Vliegende Hollander, Amsterdam, 2010 (207 p.), paperback, ISBN 978-90-495-0061-0.





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.





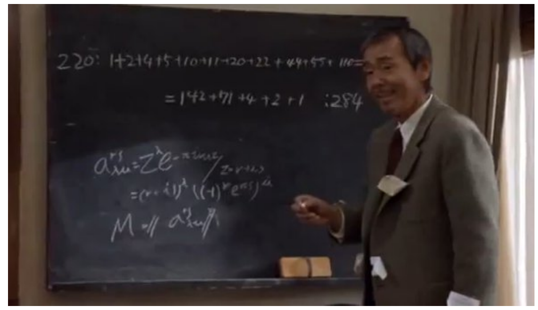
When the book came out in 2003, it was a great success and Ogawa got a prize for it. The story is simple enough and gives a poetical account of the warm friendship bonds that grow between the unmarried housekeeper, her 10-year old son and the professor. The professor is a number theorist who got a car 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 latchkey 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

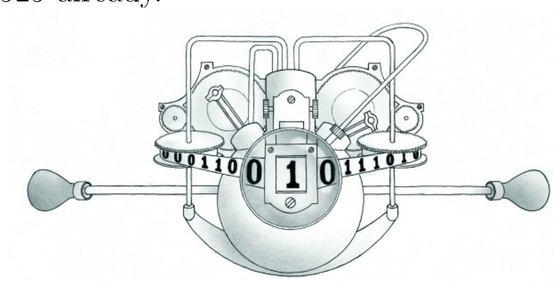
Alan Turing, Google's doodle and the Diamond Age

Turing's memorial statue in Manchester

The year 2012 has been declared the *Turing year* because Alan Turing was born in 1912 in London. He died in 1954 at the age of 41 in Wilmslow (UK) by cyanide poisoning. It was allegedly a suicide as a consequence of prosecution for his homosexuality.

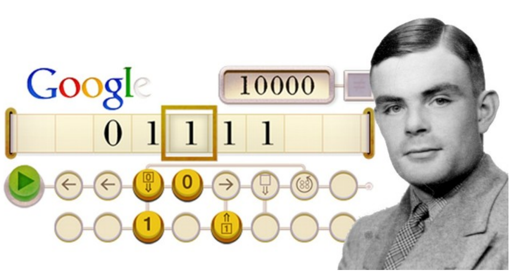
Turing got a mathematics degree in 1935 at Cambridge and got later in 1937 a PhD in Princeton. During World War II he became a key figure in breaking the code settings of the German Enigma machine. The *bombe* was an electromechanical device that he designed to find the rotor settings in the Enigma machine and hence decrypt the military German messages for that setting.

After the war he was involved in the development of the *Manchester Computers*, a project that has led to the development of modern electronic computers as it was later conceived by *John von Neumann*. The hypothetical device is currently known as a *Universal Turing machine*. Turing's involvement was a consequence of him being intrigued by the *Entscheidungsproblem* formulated by *Hilbert* in 1928: can an algorithm, starting from a set of axioms, decide whether a first-order logic statement is universally true or not? *Alonzo Church* and Turing both proved independently that it is impossible in 1936-37. Clearly, this is very closely related to *Gödel's completeness theorem*, which had been proved in 1929 already.



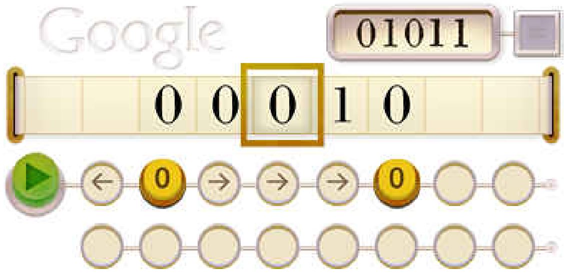
Church approached the problem by inventing λ-calculus, which he used to define functions. Computability corresponds to the fact that the function is representable in some 'normal form'. Turing approached the problem in a more algorithmic way and proposed an 'a-machine' (which is now known as a Turing machine). He also proved that the class of functions defined by λ-calculus and computable by his a-machine coincide. On the other hand, every algorithm is in fact a recursive function.

Alan Turing Google Doodle - 23th June 2012



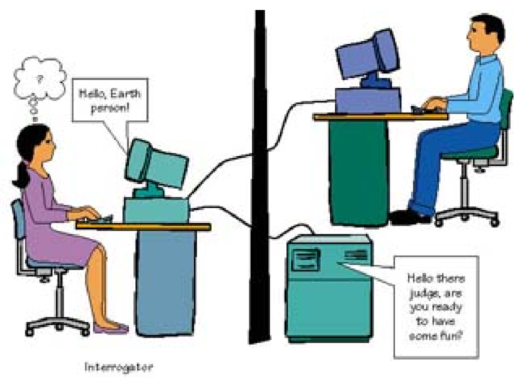
The Turing machine is a device that reads symbols (for example 0 and 1) one by one from an infinite strip. Then, following certain rules, possibly replaces the symbol by another symbol and then moves to the previous, the next, or remains at the same position to read the next symbol. The rules are described in a table and depend on the *state* of the machine. It is supposed that there is only a finite number of states. The transition depends on the state of the machine and the symbol that is read and prescribes what will be the next state, what symbol to write back on the tape and in which direction to move the reading head. A *Universal Turing machine* (UTM) is itself a Turing machine that can simulate any other Turing machine, given the description of the machine it has to simulate and its input.

Simple as this machine may be, anything a real computer can compute, a Turing machine can also compute. The difference is of course that Turing machines can manipulate an infinite amount of data (the tape is infinite) and if you have the patience of waiting an infinite time while real machines have only a finite memory and are supposed to produce a result in a finite amount of time.

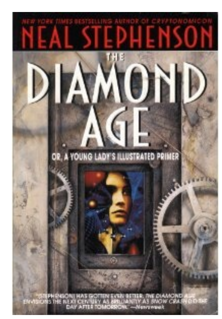


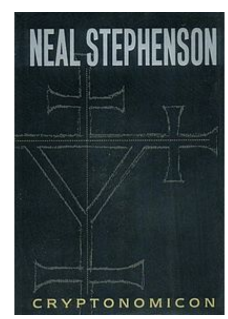
On Turing's birthday, 23 June, Google devoted a doodle to this event. It is a kind of Turing machine and at the same time a puzzle. The purpose is to generate the successive letters of 'Google'. If you want to play with it yourself, see *www.google.com/doodles/alan-turings-100th-birthday*. It's a challenge! An animation of the solution can be found on Youtube.

What is going on in the puzzle? Initially it is just counting binary. You start after pushing the green button. On the top right is a target that you should reach. (See the starting configuration above.) This target represents a letter of Google, thus the first is '01011' which represents the letter 'G'. The starting tape shows '00010' which should be transformed into the target. The reader head is represented by the frame. The transition rule can be set by the line below which indicates that it consists in moving 1 place to the left, then write a 0 or a 1 (which you can choose), then move three places to a right and write again a 0 or a 1 (which you can choose). The defaults are to write 0 in both cases. Thus if you do nothing and push the green button, then the result will be '00010' which is not the target. If however you choose both symbols to be written as '1', then the target is obtained, and you can move on to the next letter. There are many such possible variations that you should now be able to find out.



Turing can also be considered to be the father of Artificial Intelligence (AI). The *Turing test* involves a human who has to interrogate an opponent through a computer screen and he should decide on the basis of the answers received whether the opponent is a computer or a human being. In other words, the problem is: can a computer think? Is a computer intelligent? Nowadays different *chatterboxes* are available that are computer programs that interact (sometimes) in a sensible way in conversation with a human. Early programs like ELIZA (mid 1960's), PARRY (early 1970's) and RACTOR (early 1980's) were very popular. The proceedings of a symposium on Turing's test held on 4-5 June 2012 in Birmingham, are available at *www.pt-ai.org/turing-test/*.



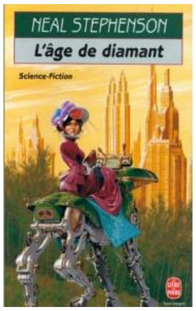


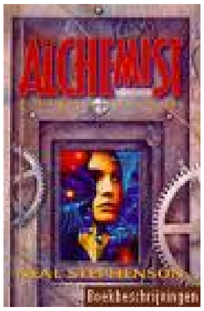
Most of the readers of this Newsletter of course do know Alan Turing and the bits of information I gave in the previous paragraphs. I believe on the other hand, not many may know what the *Diamond Age* refers to. I take this occasion to write more about one of my favorite cyberpunk authors: *Neal Stephenson*. I gave a review of his novel *Anathem* in issue 86 of this Newsletter (January 2012) and there was Paul Levrie's review of *Quicksilver*, one of his Baroque cycle books in issue 54 (September 2005).

The Diamond Age or *A Young Lady's Illustrated Primer* (1995) is one of his earlier novels that he wrote before *Cryptonomicon* (1999). The latter has two intertwining plots: one plays during World War II and evolves around the Allied code breakers of the German Enigma at Bletchley Park where Turing was working; the other plot is set at the end of the 1990's were descendants of the characters in the former plot are setting up a data haven for an anonymous internet banking system but that should also serve as a channel to help to prevent a future holocaust. This would have been a good connection with Turing, however there is somewhat less mathematics involved. So I prefer to point to *The Diamond Age*.[1]

[1]There are many editions and translations published. In French it is entitled *L'âge de diamant, ou le manuel illustré d'éducation à l'usage de filles* and in Dutch *De Alchemist of Het Geïllustreerde Eerste Leesboek voor Jongedames*.

It is a futuristic novel put in a Dickens-like Victorian style. The Diamond Age refers to an era like the Stone Age or the Bronze Age, etc. Just a few words about the story. In a world where nanotechnology governs society, there is no material shortage, since all the basic necessities can be produced very cheaply by matter compilers rearranging molecules and energy to produce whatever is needed. The society is divided into *phyles* (castes) with *Victorians* on top (controlling the feed of compilers) while a *thete* is basically casteless and at the bottom of society.



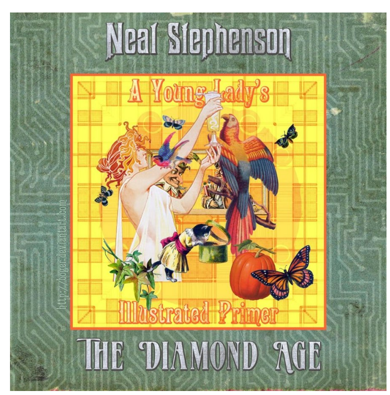


Entertainment is not by looking at a stage show or a movie, like we know it, which are *passives*, but instead *ractives* are much more common. That is something like a video game where the consumer may or may not play an active role and where the other characters may be purely computer generated, or one or more could be steered by professional actors.

A brilliant nanotech engineer Hackworth develops the code for a book that is in fact an interactive multimedia device that is supposed to educate young girls. He produces it for a rich lord, but he keeps a copy for his own daughter. However he is robbed and the copy is stolen so that he has to produce a third one. The stolen copy falls into possession of Nell, a four-year old thete-girl. Being neglected by her marginal parents she leaves home and is hence educated by the Primer. She enters the Victorian phyle and leaves her older brother behind.

While reading, Nell lives through many fairy-tale like adventures, and is taught by her toy friends, who come to life in these interactive plays. At some point, she, being Princess Nell, has to find 12 keys to rescue her brother. These are kept in as many castles. The eleventh is hidden in castle Turing. She is imprisoned but Duke Turing (who is in fact a prisoner in his own castle, only being able to execute the program he is fed with) communicates with her using chains.

Here Stephenson does indeed describe quite precisely a Turing machine. The original paper tape is replaced by a chain. The chains are 'infinitely long' *The chain containing the Duke's program dangled on either side into these holes. Nell tried throwing stones into the holes and never heard them hit bottom; the chain must be unfathomably long.* The symbols and transition rule are essential elements of a Turing machine: *The lock only had a few parts that she could observe: the crank, the bolt, and a pair of brass drums set into the top with digits from 0 to 9 engraved in them (...). The number on the top changed with every link that went into the machine, and it seemed to determine, in a limited way, what the machine would do next (...)* So when Nell finds out about how the Turing machine works, she uses it to solve other puzzles like reprogramming an organ playing sad music *'(...) plunging the place into a profound depression so that no one worked or even got out of bed (...) it could just as well be reduced to an unfathomably long and complicated Turing machine program.'* Nell also learns from a report by the Duke that adding more reading heads and more chains may slow down the computation, but it does not increase the possibilities because there is always *'a way to simulate their behavior by putting a sufficiently long chain into one of the traditional Turing machines (...) they didn't really do anything different'*.



source:
www.deviantart.com/

Why should not the Primer be a Turing machine itself, or was there a human behind it after all? So Nell knew about the *Turing test* as well. She believes that there is some human behind and indeed King Coyote in the 12th castle is and so is Miranda, who has been a surrogate mother for Nell from the beginning. Eventually Nell becomes the leader of a new phyle of orphans that all have been educated by purely computer operated Primers.

Adhemar Bultheel

International Mathematical Union

May 30, 2012
IMU AO Circular Letter 6/2012

To: IMU Adhering Organizations

From: Ingrid Daubechies, IMU President

Nominations for IMU awards 2014

Dear colleagues,

In my capacity of President of the IMU, I invite you to submit nominations for the IMU awards listed below, thus assisting the corresponding committees in their task to select the awardees who will receive their prize or medal at ICM 2014 in Seoul.

Here is the list of awards for which we presently seek nominations, each listed with the email address to which nominations can be sent, and with its short description:

- **Fields Medals** — fields14-chair@mathunion.org
  The Fields Medals are awarded every 4 years on the occasion of the International Congress of Mathematicians to recognize outstanding mathematical achievement for existing work and for the promise of future achievement.

- **Rolf Nevanlinna Prize** — nevanlinna14-chair@mathunion.org
  The Nevanlinna Prize is awarded once every 4 years at the International Congress of Mathematicians, for outstanding contributions in mathematical aspects of information sciences.

- **Carl Friedrich Gauss Prize** — gauss14-chair@mathunion.org
  The Gauss Prize is awarded once every 4 years to honor a scientist whose mathematical research has had an impact outside mathematics - either in technology, in business, or simply in people's everyday lives.

- **Chern Medal Award** — chern14-chair@mathunion.org
  The Chern Medal is awarded every 4 years on the occasion of the International Congress of Mathematicians to an individual whose accomplishments warrant the highest level of recognition for outstanding achievements in the field of mathematics.

- **Leelavati Prize, sponsored by Infosys** — leelavati14-chair@mathunion.org
  The Leelavati Prize, sponsored by Infosys, is intended to accord high recognition and great appreciation of the IMU and Infosys of outstanding contributions for increasing public awareness of mathematics as an intellectual discipline and the crucial role it plays in diverse human endeavors.

IMU also requests nominations for the

- **ICM 2014 Emmy Noether Lecture** — noether14-chair@mathunion.org

  The ICM Emmy Noether lecture is a special lecture at an ICM which honors women who have made fundamental and sustained contributions to the mathematical sciences.

More details about each of these awards and the Noether lecture, as well as lists of past laureates, can be found on the IMU Web site, at URL:

www.mathunion.org/general/prizes

and the Web pages to which you can link from there.

As you can imagine, the selection committees take their task most seriously, and a lot of thought and deliberation is spent on reaching their final decisions. To allow the committees sufficient time for this decision process, the IMU has set

December 31, 2012

as the deadline for nominations.

This does not mean that nominations reaching the committees after this deadline will not be considered. (In particular, if some truly stupendous result were obtained by a mathematician under 40 during 2013, then this achievement would of course be taken into consideration as well for a Fields Medal.) However, we would like to urge you to submit before the end of this calendar year any compelling nominations of which you are already aware now.

The names of the chairs of the various prize committees and their contact information can be found at:

http://www.mathunion.org/general/prizes/prize-committee-chairs/2014/.

The names of the other prize committee members remain confidential and will be announced at the Opening Ceremony of ICM 2014 only.

The guidelines for nominations are specified at the Web page:

http://www.mathunion.org/general/prizes/nomination-guidelines/.

For some awards (e.g., the Leelavati Prize, sponsored by Infosys) additional hints concerning the nomination can be found on the respective Web pages.

IMU prefers electronic submission of nominations, if possible in pdf form.

By sending your nomination to the special email address, you will ensure that it is automatically forwarded to the corresponding committee. A copy of your nomination materials will also be held, for the record, in the IMU Secretariat in Berlin. All the materials will, of course, be treated with the utmost confidentiality.

We look forward to receiving your nominations!

With best regards,

Ingrid Daubechies
IMU President