

Ludus



Recreational Mathematics
Colloquium III

Board Game Studies
Colloquium XVI

BOOK OF ABSTRACTS

University of Azores
April 3rd - April 6th, 2013

Organization:

Ludus Association
University of Azores

Organizing Committee:

Alda Carvalho (ISEL, Portugal)
Ana Paula Garrão (University of Azores, Portugal)
Carlos Santos (ISEC, Portugal)
Jorge Nuno Silva (University of Lisbon, Portugal)
Margarida Dias (University of Azores, Portugal)
Ricardo Cunha Teixeira (University of Azores, Portugal)

Scientific Committees:

Recreational Mathematics

Alda Carvalho, Portugal
Carlos Pereira dos Santos, Portugal
Colin Wright, UK
David Singmaster, UK
Ilda Perez, Portugal
João Pedro Neto, Portugal
Jorge Nuno Silva, Portugal
Ricardo Cunha Teixeira, Portugal
Richard Nowakowski, Canada
Robin Wilson, UK

Board Game Studies

Alex de Voogt, USA
Edite Alberto, Portugal
Fernanda Frazão, Portugal
Irving Finkel, UK
Jorge Nuno Silva, Portugal
Lídia Fernandes, Portugal
Thierry Depaulis, France
Ulrich Shädler, Switzerland

Sponsors:



1 Foreword

“Recreational Mathematics” is a problematic expression. For some people, like most professional mathematicians, Mathematics is lots of fun; but for others, like some students, Mathematics can be a nightmare.

Historically, we know that some mathematical research topics are deeply linked to puzzles and games, probability theory emerged from the analysis of chance games, graph theory was born when Euler proved that you cannot cross all the Bridges of Königsberg just once. Many other examples come to mind.

Our Colloquium will be a Show and Tell of bright pearls of Mathematics, with varied levels of sophistication, entertaining many audiences. Its main goal is to foster mathematical appreciation, an important step if we are to see improvements in its practice.

University of Azores and Ludus Association organize the Recreational Mathematics Colloquium III.

The International Society for Board Game Studies holds yearly colloquia in which scholars, university professors, museum curators, historians, archaeologists, psychologists, mathematicians, game inventors, collectors and others share their research results on board games. Previous BGS colloquia have been held in the Netherlands, Italy, Switzerland, Spain, Germany, USA, UK, Brazil, Austria, Portugal, Israel, France, Belgium.

The University of Azores and the Ludus Association organize the Board Game Studies Colloquium XVI.

Both colloquia will be hosted by the University of Azores.

<http://ludicum.org/ev/rm/13>

<http://ludicum.org/ev/bgs/13>

The Organizing Committee

3 Program - Recreational Mathematics

Wednesday, 3rd April, amphitheatre C

- 8:30 **Welcome and registration**
- 9:15 **Opening Session**
- 9:30 **Understanding cubic dice development: recent experimental results (RM+BGS)**
Alex Voogt, American Museum of Natural History
- 10:30 **Counting with counters: Gerbert's abacus (RM+BGS)**
Jorge Nuno Silva, University of Lisbon
- 11:00 Coffee-Break
- 11:30 **An update to the mutilated chessboard (RM+BGS)**
Colin Wright, Liverpool Mathematical Society
- 12:30 **Quadratum (RM+BGS)**
Helena Melo, University of Azores & CMATI
- 13:00 Break for lunch
- 14:30 **Solving dotty problems - an introduction to graph theory**
Robin Wilson, Open University
- 15:30 **Mathematics of soccer**
Alda Carvalho, ISEL & CEMAPRE/ISEG
- 16:00 Coffee-Break
- 16:30 **The Humble-Ehrhends triangle mystery**
Jorge Buescu, University of Lisbon
- 17:00 **Symmetry groups: identifying patterns in Azorean heritage**
Vera Moniz, University of Azores
- 17:30 **The Golden Ratio - from Euclid to Almada Negreiros**
Carlota Simões, University of Coimbra
- 18:30 **Break Time**
- 19:00 Welcome Cocktail

Thursday, 4th April, amphitheatre C

- 9:30 **Piet Hein & the murder of NIM (RM+BGS)**
Thane Plambeck, Counterwave, inc
- 10:30 **What is a “good” board game? (RM+BGS)**
Carlos Santos, ISEC
- 11:00 Coffee-Break
- 11:30 **Three new math-games for experiencing the interplay between algebra, geometry, and symmetry (RM+BGS)**
Oliver Labs, Universitat des Saarlandes
- 12:30 **Ancient egyptian board games: an historical account (RM+BGS)**
Joaquim Eurico Nogueira, CELC & FCT-UNL
- 13:00 Break for lunch
- 15:00 Social

Friday, 5th April, amphitheatre C (except the Open to All sessions)

- 9:00 **Order in the ranks (RM+BGS)**
Pedro J. Freitas, University of Lisbon
- 10:00 Coffee-Break
- 10:30 **Mathematical circus (Open to All)**
Ludus Association
- 11:10 **Presentation of Mathematics of Planet Earth 2013 (Open to All)**
Carlota Simões, University of Coimbra, Ana Paula Garrão, University of Azores
- 11:20 **Presentation of Mathematics of Planet Earth 2013 (Open to All)**
Jorge Nuno Silva, José Francisco Rodrigues, University of Lisbon
- 11:40 **Presentation of Mathematics of Planet Earth 2013 (Open to All)**
Ricardo Teixeira, University of Azores
- 12:00 **Magic show (Open to All)**
Lennart Green, World Champion close-up/card Magician
- 13:00 Break for lunch
- 14:30 **Lewis Carroll in Numberland**
Robin Wilson, Open University

- 15:30 **Problem solving through crafts and challenges**
Stephanie Cabral, University of Azores
- 16:00 Coffee-Break
- 16:30 **Treason strategies**
João Cabral, University of Azores
- 17:00 **Jogo do paralelo**
Raquel Faria, University of Azores
- 17:30 **Can mathematical exhibitions be recreational?**
José Francisco Rodrigues, University of Lisbon
- 18:00 **Contest “Um conto que contas”**
Helena Melo, University of Azores & CMATI
- 18:30 **Interesting Announcements (RM+BGS)**
Jorge Nuno Silva, Carlos Santos, Ludus Association
- 19:30 Conference Dinner

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| Saturday, 6th April, amphitheatre C |
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- 9:30 **Game profiling (RM+BGS)**
Richard Nowakowski, Dalhaousie University
- 10:30 **Why “Zermelo’s Theorem” is called “Zermelo’s Theorem” ? (RM+BGS)**
Lisa Rougetet, University of Science and Technology of Lille
- 11:00 Coffee-Break
- 11:30 **Vanishing area puzzles (RM+BGS)**
David Singmaster, Retired professor of London South Bank University
- 12:30 **Lasker and mathematics (RM+BGS)**
Jurgen Stigter, TWA
- 13:00 Break for lunch
- 14:30 **Turning the lights out on graphs**
António Machiavelo, University of Oporto
- 15:30 **Combinatorial games and computability**
Urban Larsson, Chalmers, University of Gothenburg

16:00 **Counting the number of sudoku's by importance sampling simulation**
Ad Ridder, University Amsterdam

16:30 Closing Session

through such games to make practice required the emergence of game strategy development.

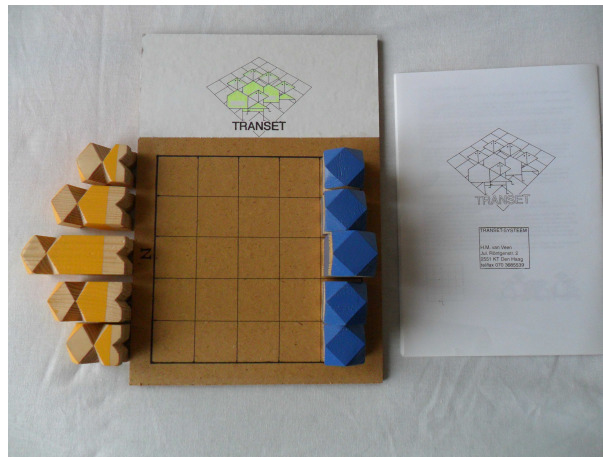
This element of human utility and pedagogical development is incorporated psycho affective own this variety of games that require the concentration of those who practice it to get the win.

In our paper we analyze the games and relate to activities that gave rise to its current application and as a recreational and educational tool.

The story of Harm van Veen and his game TRANSET (BGS)

FRED HORN, Games Inventor

Early in 2011,during one of my regular visits to “Haagse kringloopwinkels” Recycle-Shops in the Hague looking for Games, I did find a small box, wrapped in plastic-foil and filled with wooden blocks, which blocks looked like game-pieces. I was curious enough to pick it up and examine the box and to my surprise at the backside a paper was visible with game-rules, giving the Rules for a to me unknown game : TRANSET. For nearly nothing (less than 1 Euro) I became its new owner and when at home I was really curious about what I had just bought!



Quadratum (RM+BGS)

HELENA MELO, University of Azores & CMATI

SANDRA VINAGRE, University of Evora & CIMA/UE

Quadratum is a combinatorial game in three dimensions, which can be played by one or more participants. It is composed by a special board, with forty one squares, and by forty one cubes, and combines the colors white, red and

blue. In each move a player places a cube on the board, in contact with the existing cubes on the board, with at least two of its faces in correspondence (except the first move), and a maximum of five faces in contact. The game ends when one of the players can not place a cube on the board, the winner being the last player to play. Since it is a game in three dimensions, it admits several levels, but in this first version the cubes are all placed over the board. Some winning strategies will be explored.

Contest “Um conto que contas” (RM)

HELENA MELO, University of Azores & CMATI

SANDRA VINAGRE, University of Evora & CIMA/UE

The contest “Um conto que contas” (“A tale that accounts”) is open to all students of public and private schools of all country, from the first level of first cycle to the last level of secondary. The competition consists of writing and illustrating a tale involving mathematical contents. One of the goals is to promote habits of reading and writing in students and to promote coordination between various disciplines, stimulating the imagination. Participants can compete in one of eight categories, according to their level of education, in individual modality or in team, with a maximum of four elements. In the evaluation of tales, mathematical contents, the domain of language, originality, creativity, logical narrative, among others, will be valued.

Treason Game Strategies (RM)

JOÃO CABRAL, University of Azores

The Treason Game had its debut in the Recreational Mathematics Colloquium II, and now it is played in High Schools by students. But it is always a game in continuous evolution due to its richness in strategies and direct application to the teaching of isometries in Schools. We present the study, exploration and discussion of some of the strategies used by players of this game as well their connection with isometries.

Ancient Egyptian board games: an historical account (RM+BGS)

JOAQUIM EURICO NOGUEIRA, CELC & FCT-UNL

In this talk I will examine in detail some historical and religious aspects of the most important games (Senet, Mehen, 58 holes, Tjau and Seega) that were in vogue in the kingdom of pyramids in the millennia before Christ. The first four (Senet, Mehen, 58 holes, Tjau) were racing games, with the chance factor influencing the movement of the pieces and where several squares of the boardgame are trapped; the last one (Seega) is a strategy game, possibly an ancestor of Petteia and Latrunculi.