



Board Game Studies Colloquium XI

BOOK OF ABSTRACTS

Museum of Science
University of Lisbon
23-26 April 2008



Organization

Ludus Association
Museum of Science, University of Lisbon
Portuguese Mathematical Society
Center of History of Science of the University of Lisbon

Organising Committee:

Alda Carvalho, ISEL
Carlos Santos, ISEC
Jorge Nuno Silva, FCUL
Luís Saraiva, FCUL
Marta Lourenço, MCUL
Paulo Dias, MCUL

Scientific Committee:

Alex de Voogt, University of Leiden
Irving Finkel, British Museum
João Pedro Neto, University of Lisbon
Jorge Nuno Silva, University of Lisbon
Thierry Depaulis, Paris
Ulrich Shädler, Musée Suisse du Jeu

Sponsors:



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1 Foreword

The Ludus Association, the Museum of Science of the University of Lisbon, the Portuguese Mathematical Society and the Center of History of Science of the University of Lisbon are organizers of the Board Game Studies Colloquium XI (Lisbon, April 2008, 23rd-26th).

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 and Austria.

The Board Game Studies Colloquium XI also includes a strong mathematical component with specialists in Combinatorial Game Theory. More information can be consulted in the following web pages:

<http://www.boardgamestudies.info/>

<http://ludicum.org/bgs08/>

The Organising Committee

2 Invited Speakers

ALEX DE VOOGT (Leiden University, Netherlands)

Alex de Voogt is a researcher at Maastricht and Leiden University, the Netherlands. His work on experts of bao, an African mancala board game, has lead him to investigate the distribution of mancala games across the globe. He has published both museum catalogues, historical books and works on cognitive psychology.

Book publications:

2005: *A Question of Excellence: a Century of African Masters*; Africa World Press: Trenton, NJ.

2004: Fernand Gobet and Jean Retschitzki; *Moves in Mind: The Psychology of Board Games*; Psychology Press: Hove, UK.

1997: *Mancala Board Games*; British Museum Press, London.

1995: *Limits of the Mind: Towards a Characterisation of Bao Mastership*; Cnws Publications.

AVIEZRI S. FRAENKEL (Weizmann Institute of Science, Israel)

Aviezri Fraenkel is a professor of Computer Science and Applied Mathematics at the Weizmann Institute of Science, Rehovot, Israel, currently Gorenstein Visiting Professor at Queens College, Queens, NY. He has published 200 papers and book chapters in mathematics, computer science, information storage and retrieval, and Judaica.

He is a member of the Editorial Board of Discrete Math., Electronic J. of Combinatorics, Theoretical Computer Science, Internat. J. of Appl. Math., Internat. Computer Games Assoc. J.; and on the Advisory Board of INTEGERS Electronic J. of Combinatorial Number Theory. Member of the Electronic Publishing Committee of the Europ. Math. Soc.

Selected Honors: Feder Foundation Prize for initiating and creating the Responsa Project (1972); Quality Initiative Citation to the Responsa Project for creative, high-quality and visionary projects to celebrate the 50th anniversary of the establishment of the State of Israel (1998); The Fraenkel Festschrift: Electronic J. Combinatorics, vol. 8(2); Euler Medal recipient of the Institute for Combinatorics and Its Applications 2005; Recipient of WEIZAC Medal for the WEIZAC computer project, designated as IEEE Milestone (2006); Israel Prize to the Responsa Project (2007).

BRUCE WHITEHILL (The Big Game Hunter, Germany)

Bruce Whitehill is known as “The Big Game Hunter”, authority on American games. Author of over 100 articles on games, and two books, *Games: American Games and Their Makers, 1822-1992, a guide to America’s game companies*, and *Americanopoly — America As Seen Through its Games*, published in conjunction with a major exhibition at the Swiss Museum of Games.

He has been quoted in a college textbook and in The Wall Street Journal, Time, Esquire and other magazines, has written on games for Grolier’s New Book of Knowledge encyclopedia and has published in the journals Board Games in Academia and Board Game Studies/2. Currently he is the Senior Contributor for Knucklebones, a games and puzzles magazine.

He is the founder and past president of the Association of Game and Puzzle Collectors (AGPC) and on their board of directors, and a member of the International Game Designer Association (Spieleautorenzunft—SAZ). Besides his large diversified collection of early American games representing over 400 U.S. game companies from 1840 to 2000, he also owns an extensive collection of game advertisements and ephemera, and a small collection of European games and mechanical puzzles. Bruce continues his research on American games, uncovering new information about the many companies that once made them, and on the links between American and European games and companies.

Bruce has worked as a game inventor and developer for many major American game companies and as a consultant to the Toy and Game industry for over 20 years. He is the author of over half a dozen published games, and has been instrumental in the development of many others.

In August of 2005, he moved to Hamburg, Germany, and he and his wife now have a translation service for game rules (English and German). Bruce has continued his game work and research here and has been designing games for publication; his first European game, “Change Horses”, was released in March, 2008 at the Nuernberg Toy Show.

DAVID PARLETT (Games scholar and games inventor, UK)

David Parlett was born in 1939 in London, where he still resides, has a degree in Modern Languages from the University College of Wales, Aberystwyth, and describes himself as a patriotic European. In 1972, having given up first language teaching and then technical writing in public relations, he started contributing to Games & Puzzles magazine, which he subsequently

(and briefly) edited. In 1974 he became self-employed as a games inventor, writer, historian, critic and consultant.

His many books include *The Oxford History of Board Games*, *The Oxford History of Card Games*, and a translation into English verse of medieval Latin lyrics from the *Carmina Burana*. He is also the author of a dozen published games of which the best known is *Hare and Tortoise* (*Hase und Igel*), which has been published in a dozen different languages and sold two million copies since it first appeared in 1974. David gives talks and run workshops on the history, theory and appreciation of games, advises on the staging of games in period films and TV productions, and is a consultant on games terminology to the *Oxford English Dictionary*.

DAVID WOLFE (Gustavus Adolphus College, Canada)

Experience:

Gustavus Adolphus College, Saint Peter, MN, Associate Professor: 2001 to present, Department of Mathematics and Computer Science.

University of California, Berkeley, Lecturer: Spring 1992 to Spring 1996, Division of Computer Science.

Post-doc: Fall 1993 to Spring 1994, Department of Mathematics.

Education:

University of California, Berkeley: Ph.D. in Computer Science, 1991.

Cornell University: B.S. in Electrical Engineering, 1985.

Interests:

Discrete mathematics and computer science, Game theory, Probability and stochastic processes, Recreational mathematics, Combinatorics, Queueing theory, Randomness and Computation.

Publications:

Lessons in Play: An Introduction to the Combinatorial Game Theory, with Michael Albert and Richard Nowakowski, A K Peters, Natick, MA, February 2007.

Puzzlers' Tribute: Feast for the Mind, with Tom Rodgers (editors), A K Peters, Natick, MA, December 2001.

Mathematical Go: Chilling Gets the Last Point, with Elwyn Berlekamp, A K Peters, Natick, MA, January 1994. Also in paperback as *Mathematical*

Go Endgames: Nightmares For the Professional Go Player, Ishi Press International, San Jose, CA, December 1993. In Japanese as Igo no Sempo: Yose no Kenkyu, Translation by Yoshikawa Takeshiro, Toppan, Tokyo, Japan, November 1994.

IRVING FINKEL (British Museum, UK)

Irving Finkel was born in London in 1951. He received his BA in Ancient New Eastern Studies in 1969 from the University of Birmingham. That was then followed by a PhD in Assyriology for work he did in the field of “Ancient Mesopotamian Exorcistic Magic” in 1976. After spending a further three years as a Research Associate at the Oriental Institute at the University of Chicago he returned to the United Kingdom in 1979, where he was appointed Assistant Keeper of Western Asiatic Antiquities at the British Museum.

He is a man of many and varied interests. His special subjects are Ancient Mesopotamian Studies, Cuneiform writing, Lexicography, Medicine, Esoterica and the study of Ancient Magic. In addition to the publication of articles and contributions in his field of expertise, he has written a number of children’s books as well as a book on The History of Board Games.

He has contributed frequently to radio and television programmes. He wrote and presented a four part series on Mesopotamian Medicine, Dentistry and Magic titled The Wedge Between Us, on Radio 4.

JEAN RETSCHITZKI (Fribourg University, Switzerland)

Educational background:

1968: Licence in Psychology, University of Geneva;

1973: Ph.D. Psychology, University of Geneva;

1987: Habilitation, Faculty of Arts, University of Fribourg.

Professional experience:

1973-1975: Maître-assistant in a research project in Ivory Coast;

1975-1977: Maître-assistant, University of Geneva;

1977-1980: Post-doctoral fellow, University Carnegie-Mellon (Pittsburgh, USA) Dept. of Psychology (Prof. H. A. Simon);

1980-1982: Teacher (chef de travaux), Department of Psychology, University of Fribourg;

1982-1990: Associate Professor, Department of Psychology, University of

Fribourg;
since 1990: Full Professor, Department of Psychology, University of Fribourg.

Associations:

1998-2003: President of the Swiss Society of Psychology;
1998-: President of the Scientific Committee of the “Institut de Recherche et Documentation Pédagogique” (Neuchâtel);
2001-2002: Member of the Group of experts for the preparation of the future Law about Training of Psychologists in Switzerland.

Books:

P. Dasen, B. Inhelder, M. Lavallée, J. Retschitzki (1978), *Naissance de l'intelligence chez l'enfant baoulé de Côte d'Ivoire*; Berne: Huber.
J. Retschitzki, M. Bossel-Lagos, P. Dasen (1989), *La recherche interculturelle*; Paris: L'Harmattan, Tomes 1 et 2.
J. Retschitzki (1990), *Stratégies des joueurs d'awélé*; Paris: L'Harmattan.
J.-L. Gurtner, J. Retschitzki (eds.) (1991), *LOGO et apprentissages*; Neuchâtel: Delachaux et Niestlé.
J. Retschitzki, J.-L. Gurtner (1996), *L'enfant et l'ordinateur*; Liège: Mardaga.
P. M. Greenfield, J. Retschitzki (1998), *L'enfant et les médias*; Fribourg: Editions universitaires.
J. Retschitzki, R. Haddad-Zubel (eds.) (2002), *Step by step. Proceedings of the 4th Colloquium “Board Games in Academia”*; Fribourg: Editions Universitaires.
F. Gobet, A. de Voogt, J. Retschitzki (2004), *Moves in Mind: The Psychology of Board Games*; Hove, UK: Psychology Press.

RANGACHAR VASANTHA (Sri Krishnadevaraya University, India)

Ph.D. in Art History and Archaeology and engaged in research on Art and Cultural studies. She is presently Professor of History and in charge of the Art and Archaeological Museum, Sri Krishnadevaraya University, Anantapur, India. Her principal research interests are Scientific and technological aspects of Ancient Indian Culture and Art. She has authored several books and her latest publications are *Symmetry and Proportion in Indian Vastu and Silpa*; and *Islamic Architecture of Deccan*.

Her area of interest extends to Indian Board games and Chess. She has demonstrated in her research and talks that games and the playing of games are not at all simple objects of amusement but phenomena of high significance for cultural, political and even religious history. Her recent paper, “deciphering the board games invented by the Raja of Mysore”, unravels many puzzles, tricks and number patterns, which have tested the intellect

of mathematicians for thousand of years Her major scholarly research at present is the translation and critical edition of *Chaturanga Sarasarvasavam*, encyclopedic manuscript on the Indian board games and chess by the King of Mysore, Krishnaraja Wodeyar III, and her first publication, *Maharaja's Games and Puzzles*, is outstanding. She has also carried out important field work in researching games played in contemporary society.

RICHARD NOWAKOWSKI (Dalhousie University)

Education and Employment Information:

B.Sc. (Hons), 1974, University of Calgary; M.Sc. (Mathematics), 1975, University of Calgary (advisor: R.K.Guy); Ph.D. (Mathematics), 1978, University of Calgary (advisor: R.K.Guy). 1998-2003: Chair, Department of Mathematics and Statistics, Dalhousie University. 1992-present: Full Professor, Dalhousie University. 1987-1992: Associate Professor, Dalhousie University. 1983: Awarded tenure, Dalhousie University. 1979-1987: Assistant Professor, Dalhousie University. 1978-1979: Sessional Instructor, University of Calgary.

Research Interests:

Combinatorial games, graph theory, ordered sets.

Books, books edited and chapters in books:

M. Albert, RJN, D. Wolfe, *Lessons in Play*; AK Peters, 2006.

M. Albert, RJN (editors), *More Games of No Chance 3*; to appear, Cambridge University Press, 2007.

RJN (editor), *More Games of No Chance*; Cambridge University Press, 2002.

RJN (editor), *Games of No Chance*; Mathematical Sciences Research Institute Publications 29, Cambridge University Press, 1996.

RJN, "... Welter's game, sylver coinage, dots-and-boxes, ...", *Combinatorial Games, Proceedings of symposia in applied mathematics* 43, 1991; AMS Short Course Lecture Notes, R. K. Guy (editor), pp. 155-182.

THIERRY DEPAULIS (Paris, France)

Thierry Depaulis (born 1949 in Bordeaux), prepress manager and editor, studies in History (Bordeaux University), game and playing-card collector, independent game historian mostly interested in "mind" games. Chairman of the International Playing-Card Society and Honorary Fellow, winner of

the 1992 Modiano Prize (for his publications on the history of playing cards and card games), Secretary General of “Le Vieux Papier”, a society devoted to the study of ephemera and other popular prints, member of the Board of Administration of the Fondation du Musée Suisse du Jeu, La Tour-de-Peilz.

ULRICH SCHÄDLER (Musée Suisse du Jeu, Switzerland)

Ulrich Schädler (* 1958), Archaeologist (Greek and Roman Archaeology, Pre-history); director of the Swiss Museum of Games (Musée Suisse du Jeu) at La Tour-de-Peilz at the Lake Geneva; member of “Initiativgruppe Königstein” for chess historical research; numerous articles in “Spielbox”, the German games magazine, and “Fachdienst Spiel”.

Select archaeological publications:

“Ionisches und Attisches am sogenannten Erechtheion in Athen”, *Archäologischer Anzeiger* 3 (1990), 361-378;

“Attizismen an ionischen Tempeln Kleinasiens”, *Istanbuler Mitteilungen* 41 (1991), 265-324;

“Ikonologie und Archäologie”, *Antike und Abendland* 39 (1993), 162-187;
Begegnungen. Frankfurt und die Antike (Frankfurt am Main 1994), 2 vols. (with Ursula Mandel and Marlene Herfort-Koch);

“Archäologie, Theater und Sport im Frankfurter Waldstadion”, *Stadion* 23 (1997), 16-59;

“Scavi e scoperte nella Villa dei Quintili, Catalogo dei rinvenimenti scultorei, Catalogo dei documenti d’archivio”, in *La Villa dei Quintili. Fonti scritte e fonti figurate*, a cura di Andreina Ricci (Roma 1998), pp. 29-234.

Select publications on the history of games:

“XII Scripta, Alea, Tabula – New Evidence for the Roman History of ‘Backgammon’”, in Alexander J. de Voogt (Hrsg.), *New Approaches to Board Games Research* (Leiden 1995), pp. 73-98;

“Spielen mit Astragalen”, *Archäologischer Anzeiger* 1 (1996) 61-73;
Globusspiel und Himmelschach. Brett- und Würfelspiele im Mittelalter (Darmstadt 1998);

“Gaming pieces for chess variants”, *The Chess Collector* 1 (1999), 8-13;

“Damnosa alea Würfelspiel in Griechenland und Rom”, in *5000 Jahre Würfelspiel*, cat. of the exhibition Salzburg (= Homo Ludens supplement) (1999), pp. 39-58;

“Sphären-‘Schach’. Zum sogenannten ‘astronomischen Schach’ bei al-Mas’udi, al-Amoli und Alfons X”, *Zeitschrift für Geschichte der arabisch-islamischen Wissenschaften* 13 (1999/2000), 205-242;

“Latrunculi – a forgotten Roman game of strategy reconstructed”, *Abstract Games* 7 (2001), 10-11;

as editor: *Jeux de l'Humanité. 5000 ans d'histoire culturelle des jeux de société*, Genève 2007 (*German edition: Spiele der Menschheit. 5000 Jahre Kulturgeschichte der Gesellschaftsspiele*, Darmstadt 2007);

“The doctor’s game – new light on the history of ancient board games”, in: Ph. Crummy et al. (ed.), *Stanway: an élite burial site at Camulodunum*, London 2007, 359-375;

Board Game Studies (vol. 1, 1998 - 7, 2004), edited by Thierry Depaulis, Irving Finkel, Ulrich Schädler, Alex de Voogt, and Vernon Eagle.

V. BALAMBAL (University of Madras, India)

Professor of History, (Retd) University of Madras. President, Probus Club of Chennai (Senior Citizens’ Assn, Sponsored by the Rotary Club Of Madras).

Research publications: 5 Books and 145 Research papers.

Books:

Feudatories of South India (1978); Allahabad: Chugh Publication.

Paluvettaraiyars (Tamil) (1980); Chennai.

Studies in the History of the Sangam Age (1998); Delhi: Kalinga Publications, ISBN 81-85163-87-3.

Studies in Chola History (1998); Delhi: Kalinga Publications, ISBN-81-85163-86-5.

Folk Games of Tamilnadu (2005); Chennai: C. P. Ramaswamy Aiyar Foundation, ISBN-81-901484-2-7.

Honours:

Honored as one of the Best Historians in the South Indian History Congress held at Trivandrum from 25-27 Feb. 2002, hosted by the University of Kerala.

“Woman of the Month”, in *The Hindu*, Down Town 7.3.2002.

Awarded “PROBUS GEM” on 31.7.2004 by the Probus Club of Chennai.

Awarded Service Medal by the Russian Government in 2005 (80th year of the Foundation of the Russian Cultural Centre) at the Russian Cultural Centre for the services rendered through the Probus Club of Chennai.

“Excellence Award in Volunteering” given by the Dignity Foundation, Chennai on Elders’ Day Celebration on 7th October, 2006 at the Little Sisters of the Poor, Harrington Road, Chennai.

Received the Certificate of Appreciation by the Russian Centre of Science and Culture on 26.10.2007 at the Russian Centre of Science and Culture.

Awarded the title KALVIKKADAL by the Pudukkottai Literary Assn at Pudukkottai on 16th Dec, 2007 for the academic achievements.

3 Program

Wednesday, 23rd April

8:00 **Welcome and registration** (Main Entrance of the Museum)

9:00 **Opening Session** (Manuel Valadares Amphitheatre)

Manuel Valadares Amphitheatre

9:30 **Ancient American Board Games, I: From Teotihuacan to the Great Plains**
(35+10) Thierry Depaulis, Paris

10:15 **The Game of Dashavtar**
(25+5) José Carlos Quadrado, ISEL

10:45 Coffee-Break

11:15 **Some Random Thoughts on Chance and Skill**
(35+10) David Parlett, Games Scholar and Games Inventor

12:00 **History, Exhibitions and Activities - Board Games in a Museum Context**
(15+5) Paulo Dias, Museum of Science, University of Lisbon

12:20 **Cooperative Strategies in Board Games**
(15+5) Paula Falcão, KDP Kepler

Aurélio Quintanilha Amphitheatre (**Parallel Session**)

12:20 **Jogos Matemáticos, a Portuguese Project**
(15+5) Alda Carvalho, ISEL

12:40 Break for lunch

Manuel Valadares Amphitheatre

14:15 **Board Games in the Indian Ocean: Isopaedea of History**
(35+10) Alex de Voogt, Leiden University

15:00 **On the Use of the Chess Game to Represent Famous Battles**
(25+5) Pedro Palhares, University of Minho

15:30 Coffee-Break

16:00 **Draughts and Academie des Jeux**
(25+5)) Jurgen Stigter, TWA

16:30 **Alekhin's Death: Murder or Natural Causes?**
(25+5) Dagoberto Markl, National Museum of Ancient Art

- 17:00 **Origami's Geometry**
 (25+5) Liliana Monteiro
- 17:30 **Visit to Laboratorio Chimico**
 Marta Lourenço, Museum of Science, University of Lisbon
- 18:30 Welcome Cocktail (Main Entrance of the Museum)

Thursday, 24th April

Manuel Valadares Amphitheatre

- 9:30 **Board Game, Astronomy and Astrology - A New Invention of the King of Mysore**
 (35+10) Rangachar Vasantha, Sri Krishnadevaraya University
- 10:15 **Origami its History and Mathematics**
 (25+5) Fátima Granadeiro, Agrupamento de Escolas de Carcavelos
 José Manuel Rodrigues, ES Eça de Queirós
- 10:45 Coffee-Break
- 11:15 **The Use of Pit and Pebble Games in Education: Benefits and Limits**
 (35+10) Jean Retschitzi, Fribourg University
- 12:00 ***O Jogo do Crescimento and Collecta***
 (15+5) Brian Castelli Azevedo, KDP Kepler
- 12:20 **A Transmedia Comparison of Game Mechanics in Board and Digital Games**
 (15+5) Brian Magerko, Michigan State University

Aurélio Quintanilha Amphitheatre (**Parallel Sessions**)

- 12:00 **Metromachia - An Ancient Pedagogical Game**
 (15+5) Isabel Catarino, ES Pinhal Novo
- 12:20 **Education Via a Board Game: Understanding Forecasting Basics**
 (15+5) Rozainum Abdul Aziz, University Technology Mara
- 12:40 Break for lunch

Manuel Valadares Amphitheatre

- 14:15 **Board Games in Ancient Ephesus**
 (35+10) Ulrich Schädler, Musée Suisse du Jeu
- 15:00 **The Sociable Goose**
 (25+5) Adrian Seville, City University London
- 15:30 Coffee-Break

- 16:00 **Mathematical Games**
 (25+5) Maria das Dores Ferreira, University of Minho
 Pedro Palhares, University of Minho
 Jorge Nuno Silva, University of Lisbon
- 16:30 **An English Riddle**
 (25+5) Arie van der Stoep, University of Leiden
- 17:00 **The l'Attaque Family of Games: Comparisons Beyond a Patent**
 (25+5) Alex de Voogt, University of Leiden
 Fred Horn, Games Inventor
- 18:00 **Official Opening of the Exhibition *Mathematical Games Throughout History***
 Mariano Gago, Minister of Science, Technology and Higher Education (to be confirmed)
 Ana Eiró, Director of Museum of Science, University of Lisbon
 Nuno Crato, President of the Portuguese Mathematical Society
 Ana Simões, President of the History of Sciences Center of Univ. of Lisbon
 Jorge Nuno Silva, President of Ludus Association

Friday, 25th April

Manuel Valadares Amphitheatre

- 9:30 **A Historical Survey of Combinatorial Game Theory**
 (35+10) Richard Nowakowski, Dalhousie University
- 10:15 **On the Puzzles with Polyhedra and Numbers**
 (25+5) Jorge Rezende, University of Lisbon

Aurélio Quintanilha Amphitheatre (**Parallel Session**)

- 10:15 **Goths, Vikings and Hanseatic Town: Gaming Pieces From Archeological Excavations in Elblag, Poland**
 (25+5) Piotr Adamczyk, The Museum of Archeology and History in Elblag

Manuel Valadares Amphitheatre

- 11:15 **Why Are Games Exciting and Stimulating?**
 (35+10) Aviezri Fraenkel, Weizmann Institute of Science
- 12:00 **Combinatorial Games & BGS**
 (15+5) Carlos Pereira dos Santos, ISEC
- 12:20 **Combining Mutators and The Math Behind Progressive Mutators**
 (15+5) Bill Taylor, Canterbury University
- 12:40 Break for lunch

- 14:15 **On Problem Design in Games**
 (35+10) David Wolfe, Gustavus Adolphus College
- 15:00 **Archimedes's Stomachion**
 (25+5) Henrique Leitão, University of Lisbon
- 15:30 **Group Photo** (Main Entrance of the Museum)
- 20:00 **Conference Dinner** (Meeting Point: 19:30 at the Museum Entrance)

Saturday, 26th April

Manuel Valadares Amphitheatre

- 9:30 **Toward a Classification of Non-Electronic Table Games**
 (35+10) Bruce Whitehill, The Big Game Hunter
- 10:15 **Chess as a School Sport: Its Relation to Academic Success and School Integration**
 (25+5) António Lago, Basic School Frei Bartolomeu dos Mártires
 Luísa Santos, Polytechnic Institute of Viana do Castelo
 Pedro Palhares, University of Minho
- 10:45 Coffee-Break
- 11:15 **Revival of Traditional Board Games - Prospects and Retrospects**
 (35+10) V. Balambal, University of Madras
- 12:00 **Games as Cultural Practice: Post Colonial Imaginations**
 (15+5) Francisco Ortega-Grimaldo, Texas Tech University
- 12:20 **Opponent: Enemy or Complementary?**
 (15+5) Gaspar Pujol, Universitat Internacional de Catalunya
- 12:40 Break for lunch
- 14:15 **The Game of Fifty-Eight Holes: New Examples and New Ideas**
 (35+10) Irving Finkel, British Museum
- 15:00 **Mancala Games in Brazil: is Board Game a Media?**
 (25+5) Maurício Lima, Origem
- 15:30 **Game Systems and Rule Mutators**
 (25+5) João Pedro Neto, University of Lisbon
- 16:00 Closing Session (Manuel Valadares Auditorium)

4 Abstracts

The Sociable Goose

ADRIAN SEVILLE, City University London

Abstract: The Game of Goose (le Jeu de l'Oie) is a race game played with double dice on a spiral track for stakes and penalties paid into a winner-take-all pool. Within this simple format, there are literally thousands of variations of theme, iconography etc. In the great majority of these games, the player is not required to do anything except throw the dice, move the token according to the rules, and pay to the pool as instructed.

This contrasts with certain other race games, in which the player is expected to speak, e.g. to answer a question correctly, or make a formula response or to undertake some action e.g. by a prescribed “forfeit” observed by the playing company. In these ways, the game becomes more “sociable”, in the sense that there is a crossover into what are often called “jeux de société” or “party games”.

The presentation, illustrated by games across the centuries and across Europe, will explore this interface. It will also cover Goose-type games that, though not “sociable” in the above sense, do nevertheless deal with aspects of social interaction, such as love, marriage, the art of conversation, and the development of civilized behavior.

Jogos Matemáticos, a Portuguese Project

ALDA CARVALHO, ISEL

Abstract: Ludus Association and other mathematical associations organize yearly the Portuguese Tournament of Mathematical Games (*abstract games* is the standard term). Since 2005, this tournament is growing up. In 2008, 1100 students (ages 7 to 17) from all the country join at Braga to play six different abstract games. In this talk we will see how it is possible to implement a project like this and why it is good for the young students.

Board games in the Indian Ocean: Isopaedea in history

ALEX DE VOOGT, University of Leiden

Abstract: Research on the dispersal of mancala games is frustrated by a lack of historical evidence pertaining to rules and playing practices. This is compensated by numerous systematic descriptions of mancala games that detail board and rules showing patterns of similar games across the continents.

The question concerning the origin of mancala games has entered the li-

terature since the first systematic descriptions by Stewart Culin (1899) were published. Speculation was added that mancala must be African and this was supported by the unique presence of four-row mancala in Africa and the complexity of rules found in Africa and not elsewhere.

Recent findings show that four-row mancala is found outside sub-Saharan Africa, for instance in Oman, and that complex rules are not limited to the African continent. On the contrary, at least two distinct ways of moving around a mancala board, commonly known as sowing counters, can be distinguished for Asian mancala games that have no significant presence in Africa.

Recent research on the Indian Ocean coast of Africa has made it possible to relate trade routes to the dispersal of four-row mancala. Making such a connection has a dual purpose: It sheds light on the history of four-row mancala and it establishes a way to understand mancala dispersal as it is found today.

The l'Attaque family of games: comparisons beyond a patent

ALEX DE VOOGT, University of Leiden

FRED HORN, Games Inventor

Abstract: In the study of board games, historical research on so-called authored games has concentrated on patents. Although legal papers and patent registrations remain important sources for tracing the history of these games, their history is not necessarily limited to what is sealed in writing. The distribution of authored games outside the western world particularly complicates the understanding of their history. Connecting games from different time periods and from different continents requires insight in the unique elements of a game, not just from a legal but from a historical point of view.

The possibilities and complexities of comparing authored games in an international context is well-illustrated by the game of l'Attaque and its influence on a series of games that are found in Europe, the United States and China. A first analysis of the characteristics of this game raises the question to what extent a similar set of game elements points at a historical connection.

Chess as a school sport: its relation to academic success and school integration

ANTÓNIO LAGO, Basic School Frei Bartolomeu dos Mártires

LUÍSA SANTOS, Polytechnic Institute of Viana do Castelo

PEDRO PALHARES, University of Minho

Abstract: We are developing a study in order to ascertain the potentiality of chess as a school sport for all and to promote a better integration of children

considered at risk by the school and ultimately their academic success. This study will take place in a basic school (5th to 9th years of schooling). We have so far administered a questionnaire to students and we will present the analysis of this data.

An English Riddle

ARIE VAN DER STOEP, University of Leiden

Abstract: A thing and the word for this thing are an indissoluble unity. An example. In 1000 AD watercourses called 'river' ran through England. Today they are still running, and they are still called "river". If a thing lives on but it receives a new name, something special must have happened. It is a signal that an investigation is necessary. AD 1000 English people played chess, and they still do. But in 1000 the game had another name than today. What could have happened?

Why are games exciting and stimulating?

AVIEZRI FRAENKEL, Weizmann Institute of Science

Abstract: Games have a natural appeal, that entices both amateurs and professionals to become addicted to the subject. What is the essence of this appeal? Perhaps the urge to play games is rooted in our primal beastly instincts; the desire to corner, torture, or at least dominate our peers. A common expression of these dark desires is found in the passions roused by local, national and international tournaments. An intellectually refined version, well hidden beneath the façade of scientific research, is the consuming drive "to beat them all", to be more clever than the most clever, in short — to create the tools to *Math-master* them all in hot *combinatorial combat*! Reaching this goal is particularly satisfying and sweet in the context of combinatorial games, in view of their inherent high complexity.

Combining Mutators and The Math Behind Progressive Mutators

BILL TAYLOR, Canterbury University

Abstract: We make a few remarks on mixing mutators, with especial reference to how mutators may need to be modified to ensure playability.

The main topic is the study of multi-move mutators, including various types of progressive-move mutators, (as in e.g. “Progressive Chess” with its 1, 2, 3, 4... progression of moves per turn).

A method of judging the fairness of mutators is suggested, with comments inspired by the theory of Divergent Series (based on Hardy’s seminal work), which includes such “gems” as

$$1 + 2 + 3 + 4 + 5 + \dots = -1/12$$

and

$$1 - 2 + 3 - 4 + 5 - \dots = 1/4.$$

“O Jogo do Crescimento” and “Collecta”: experiences of the use of board games in the implantation of new administration models in Brazilian companies

BRIAN CASTELLI AZEVEDO, KDP - Kepler

Abstract: Observing the history of the human development we can note the great importance of the games as form of transmitting values, knowledge and social living standards to the newest generations. The use of games makes possible to develop technical abilities and behaviors considering the four aspects that compose the integral human being: physical, mental, emotional and spiritual. The perceptions of this fact made the use of the games in training and, even in education, enlarge significantly in the last years.

In Brazil, the use of games by the companies is growing. This use is not restricted only to training designed to transmit technical knowledge or to promote wanted behaviors. Games, mainly board games, are used as an entertaining simulation of new administration models that should be understood and incorporated by the company’s collaborators.

This article seeks to present and to analyze the process of creation of two board games: “O Jogo do Crescimento” developed to transmit the Model of Administration for Competencies of the company UNIPAC, and “Collecta” created for the group PEPSICO with the understanding objective, by their

collaborators, of the Model of Remuneration adopted.

The creation process and production of the games can be divided in 6 parts: understanding of the company and of the model to be simulated; conceptual creation of the game; validation and adjustments; making of a prototype; beta-test and last adjustments; and final production of the game.

Regarding the first part (understanding of the company and of the model) it can be noticed the influence of the culture of each company and of the complexity of model information in the character of the game. It is verified the importance of a good registration of the information and observations of these characteristics by the responsible professional for the accomplishment of this stage.

The conceptual creation refers to the idealization of the mechanics and format of the game. In this stage the game repertoire and a state of intuitive perception constitute essential factors for its accomplishment.

The validation phase and adjustments happen working side-by-side with the customer. Aspects as visual identity and mechanics of the game are appraised in relation to the corporate norms and essential characteristics of the model, respectively, and validated with the adjustments that might be necessary. A critical factor of this stage is the participation of the responsible for the creation and/or implantation of the model in the company, or better, the clarity that these have in relation to the essential characteristics of the model.

Once the visual identity and dynamics of the game are validated, and adjustments made, it's time to produce one game unit that will be used in the beta-test. In this stage the suppliers choice is critical in order to guarantee quality and time of delivery.

The beta-test refers to the application of the game for verification of its effectiveness and identification of possible final adjustments that can make it more interesting and dynamic. It was verified that the participants' choice for the beta-test should reflect the profile of the public to which the game is destined, as well as, the ignorance for these participants that it is a test are the critical factors of this phase.

After the accomplishment of the beta-test and facts to the adjustments that were identified, it occurs the production of the number of units that the customer needs, in this phase the critical factor is also the choice of suppliers.

Until this date, "O Jogo do Crescimento" was already applied in the process

of implantation of the Model of Administration by Competence in the company UNIPAC, with excellent results, showing the effectiveness of the use of games in the companies. The game Collecta is in the phase of production of the units wanted by the group PEPSICO and until Board Games Studies Colloquium XI accomplishment it will be possible to present data regarding its application.

To finish, we can identify, with the analysis of the creation process of each one of the two games, which are the critical points of the executed stages, allowing the teams of games creation, that have as objective the use of these in the implantation of new administration models or with similar objectives, to establish plans for their own development with creators of games.

A Transmedia Comparison of Game Mechanics in Board and Digital Games
BRIAN MAGERKO, Georgia Institute of Technology

Abstract: Digital computer games are a relatively new entertainment medium that has formed several distinct genres, such as first-person shooter games or real-time strategy games. Each genre has associated with it a typical set of means that the player interacts with the game model (called game mechanics). Digital games have yet to explicitly draw from a wealth of applied game mechanics used in a medium far older and more matured than they are—board games. This talk will explain the research goals of the Digital Tabletop Research Group, which are to a) identify the key game mechanics in board games that make them engaging or entertaining and then b) identify how those mechanics relate to current or hypothetical digital games. Rather than simply explore how board games can be adopted to digital counterparts, we are interested in how understanding the underlying mechanics can be used to influence design innovation in the digital realm. A secondary interest is in exploring the opposite relationship by studying digital games that have been adapted as board games (e.g. /Doom/ or /Starcraft/). I will go through several case studies of analyzing modern board games, present our findings, and point to a generalized approach to conducting this type of transmedia analysis.

Toward a classification of non-electronic table games
BRUCE WHITEHILL, The Big Game Hunter

Abstract: Game theorists have long attempted to devise a method of classifying or cataloguing the myriad types of games that exist and have existed. Scientists examine specifics within board games, cataloguing games by their method of play. Modern game companies separate their game product line into children's games, family games, and adult games. Players use divisions according to the type of game: board game, card game, skill and action

game, party games, and other. Further classification includes by author, number of players, complexity, and length of play. This author examines whether all the factors used to differentiate games can be employed in one system of classification and attempts to determine if they can be applied to all games, past and present.

Combinatorial Games and BGS

CARLOS PEREIRA DOS SANTOS, ISEC

Abstract: Mathematics is an exact and abstract science with an huge number of applications. Games are very mathematizable. A recent mathematical field named *Combinatorial Game Theory* is growing up. International Society for Board Games Studies holds yearly Colloquia with, among others, a considerable number of very good game inventors. In my talk i will show how mathematics is present in their inventions.

Alekhine's Death: Murder ou natural causes?

DAGOBERTO L. MARKL, National Museum of Ancient Art

Abstract: On the 24th of March 1946, the World Champion Alexander Alekhine was found dead in his bedroom at the Hotel do Parque in Estoril. Over the causes of his dead the first version was that he choked and asphyxiated while he was having dinner in his bedroom. A second version acknowledged a heart attack.

However, these first theories are refuted by the fact that Alekhine was photographed twice after he was found dead. The fact that he was seating in a couch, as if he had fallen asleep and having by his side, on top of a small table, several intact pieces of the dinner service and the untouched food proved that his didn't died choked, for the natural violent convulsions would provoke his fall from the couch and the break of some ceramic.

Another suspect evidence is the fact that, comparing both photos, some objects are placed in different positions. This fact leads us to believe that it was a forged scene meant to disguise a murder.

Today we know that the Romanian industrial Aristides Sain, which by that time lived in Estoril, recently declared that he was called that night by the police to identify a body of man that held in his pocket a visiting card with his name. It was Alekhine. Sain learned that Alekhine was killed in the place that his body was found. A park close to the Hotel do Parque.

Why he was killed? We suppose it was the Portuguese political police, by that time the PVDE, along with the soviet police and possibly with others

form the Allies countries. The cause? Alekhine had been a collaborator of the Nazi regime.

A serious conflict had emerged in the Soviet Union when Botvinnik agreed, against the dispositions of the soviet government and the chess federation, to play one match for the World Championship against Alekhine. This match would be held in England and curiously the next day to Alekhine's dead a telegram arrived to Estoril confirming the date of the event.

Knowing of these facts the secret police acted and set the scenery of dead by asphyxiation.

Some random thoughts on chance and skill

DAVID PARLETT, Games Scholar and Games Inventor

Abstract: Games are anciently and popularly divided into three classes: games of skill such as Chess and Go, games of chance such as Snakes and Ladders and Roulette, and games of mixed chance and skill such as Backgammon and Bridge. Such categorization is patently inadequate. It is slightly more adequate to demolish the divisions and regard chance and skill as polar opposites of a single continuum, so that any given game may be regarded as involving x per cent skill and $(100 - x)$ per cent chance.

But then skill and chance are themselves inadequate terms. Games involve many different forms of chance, some of which are perceived rather than real. A more appropriate term for this end of the spectrum is uncertainty, or unpredictability as to the outcome of a game. All games by definition involve a degree of uncertainty, for if the outcome of a game were ever entirely certain or predictable there would be no point in playing it. Hence, in a sense, there is no such thing as a game of "pure" skill. What are the elements of uncertainty or types of chance that may be encountered in games? Can they be categorized, and if so, to what extent are they relevant to a classification of games?

At the opposite end of the spectrum lies the antidote or counter to uncertainty, which is the degree, if any, to which a player may control or at least influence the outcome of a game. The opposite of uncertainty is better characterized as controllability rather than skill, as skill itself is not an atomic property: there is no such thing as a single, universal "skill at games" but rather many different types of skill. People tend to play those games for which their particular talents suit them, or, if their talent is not one of controllability, to which they are most attuned by temperament. What are the elements of controllability, or types of skill, that may be encountered in games? Can they be categorized, and if so, to what extent are they relevant

to a classification of games?

Also relevant to an enquiry into chance and skill, or uncertainty and controllability, is a consideration of value judgments. Why do so many people extol games of high strategy such as Chess and Go to the relative detriment of games of chance? To what extent do they do so on grounds of intellectual arrogance and to what extent on grounds of morality (by associating games of chance with gambling)? To what extent are such critiques valid?

Incidentally, does skill at games include skill at cheating? And does the use of “magic” count as cheating?

These and similar questions I pose only because they are interesting, and not because I have any intention (or pretension) of answering them.

On Problem Design in Games

DAVID WOLFE, Gustavus Adolphus College

Abstract: Astutely posed problems can serve multiple goals in the field of games. More than merely entertaining the thoughtful, problems can further a research agenda and connect researchers and games practitioners. I'll present examples from both popular and abstract games, as I discuss how problem design can affect the games culture.

Origami: its history and mathematics

FÁTIMA GRANADEIRO, Agrupamento de Escolas de Carcavelos
JOSÉ MANUEL RODRIGUES, ES Eça de Queirós

Abstract: One of the main attractions of using origami, the Japanese art of paper folding, is that, by definition, it requires the use of your hands; the latent mathematical learning will then happen.

We will take you into a journey to its past and a trip through time that will allow you to build an origami figure, perhaps the water bomb or a cube or even, who knows, the famous crane... but most important of all, we will use only the set of axioms published by Humiaki Huzita in 1992. Each application of an axiom is akin to folding a sheet, using some features of the sheet, like points and lines, and then unfolding it again. In the meantime, we'd like to show how this powerful set of axioms allows you to solve an ancient problem: The trisection of the angle, which has no solution within Euclidean geometry.

Games as Cultural Practice: Post Colonial Imaginations

FRANCISCO ORTEGA-GRIMALDO, Texas Tech University

Abstract: It is my believe that board games are a very strong medium to present social issues and be used to stimulate dialog, awareness, and even a change of opinion on those who play them. Board games, in contrast to Internet games, promote a direct connection between individuals, they allow a direct dialog that electronic media, even now, has not been able to reproduce. The capacity of Internet games to promote social problems has been explored with interest because of the appeal on technology and because of the immediacy that the Internet allows. Still, social issues, even in our fast paced world, are mostly settled in person. In debates, confrontation, political manifestations, or fights. For this reason, our "archaic" ways of play, meaning the use of board games, can serve as the means to present difficult-to-talk issues.

In my research, I explore the issues related to immigration between the political borders of Mexico and the United States. I present this theme in board game scenarios that illustrate the problematic being faced by these two countries and by the people affected by the unsettled issues. Topics like drug dealing, smuggling, illegal crossing, abuse, and the search for a better life are included in three games that I am presenting to specific audiences in order to archive their reactions to the games and to the US-Mexico border problematic. Conclusions have not been reached yet but I am interested in presenting the process for this research.

Opponent: enemy or complementary?

GASPAR PUJOL, Universitat Internacional de Catalunya

Abstract: Games (as opposed to childish casual play) are inconceivable without rules, and those without a goal. That goal, whichever it is, must present some kind of difficulty or challenge to players. Without that difficulty, that “something not trivial” to achieve, there is no game. One of the premises in games is that the final result is not known, and that uncertainty is what moves players to play. As this uncertainty is caused by the challenge that the game itself presents, without challenge the interest for the game falls to minimums.

How should one find this challenge? Even though you can play alone with puzzles there is no better challenge than finding a worthy opponent for playing. An opponent can present the optimal challenge, and in the end, allow properly playing a board game. But is this opponent really an enemy? Are we really competing with our adversary? Is our antagonist really fighting against us? Are we rivals or just players? We will first analyze all these terms etymologically to put down myths about gaming, players and competition.

Following that we would discuss the idea of the opponent as complementary, eliciting the analogies with traditional cosmological symbols such as the Yin-Yang. We would see that the opponent allows and limits the game at the same time, and that it has to be understood as a reflection of oneself. The altering is dissolved into the unity, and both poles (both player and opponent) become one in the game.

So in short this communication reflects some philosophical and anthropological implications about the figure of the “opponent”, essential in board games.

Archimedes’s Stomachion

HENRIQUE LEITÃO, University of Lisbon

Abstract: Archimedes’s “Stomachion” is one of the lesser works of the famous mathematician from Ancient Greece. The convoluted history of its textual transmission combined with the difficulty in interpreting the fragments of extant text has obscured the true meaning of the work; usually it has been interpreted as some sort of game. However, paleographic findings and new interpretations in recent years seem to have shed a new light on this strange and difficult text. In this presentation I will summarize the history of this text commenting on its possible interest for the history of board games.

The Game of Fifty-Eight Holes: New Examples and New Ideas
IRVING FINKEL, British Museum

Abstract: The ancient Game of Fifty-Eight Holes was one of three long-lasting board games from the world of the ancient Near East. Mysteriously, this game achieved widespread international popularity over some two millennia. The game as usually reconstructed by writers today, however, seems deadly boring. This paper will reconsider the archaeological evidence, and with the help of some newly-discovered examples will outline the history and evolution of this game, and show how the desire for a more interesting and compelling contest came in time to affect the very design of the board.

Metromachia - an ancient pedagogical game
ISABEL CATARINO, ES Pinhal Novo

Abstract: Metromachia is a game that unfolds in an imaginary war scenario, deeply influenced by medieval ideas, even though it was a time of liberation from obscure concepts. Two armies tried to defend their castles and conquer their enemy's. Metromachia can be apprehended as a war game included in the family of the abstract games.

Metromachia was a game where all the elements of the two armies fighting each other were represented by plane figure and geometric solids. The hierarchy was characterized by the attributes of each piece.

As a game where two geometrical armies face each other, all moves, blockages and captures are grounded on mathematical concepts and knowledge, namely arithmetic and geometry.

The *μετρομαχια*, *sive Ludus Geometricus*, it's a game created in 1578 by William Fulke, professor in Cambridge.

The use of pit and pebble games in education: Benefits and limits
JEAN RETSCHITZKI, Fribourg University

Abstract: Many authors have claimed that playing board games should bring several benefits in different aspects of children's life: motor skills, social abilities, cognitive processes.

We will review the literature about pit and pebble games in education. Until now we found mainly superficial suggestions, a few reports or testimonies about positive outcomes but only a few results of good research projects. The available data are not conclusive and more rigorous research needs to be done before one can be confident that board games in general, and man-

cala games in particular, have positive effects on instruction in general.

Because of the nature of the rules governing pit and pebble games, most educational propositions are about mathematical concepts. We will discuss the possible activities at different ages, ranging from elementary schools to college students. We will discuss the important concept of “Moves in hand” and show how it could be used in a curriculum.

Game Systems and Rule Mutators

JOÃO PEDRO NETO, University of Lisbon

Abstract: Abstract games, like almost all other games, are rules and material. In the design of new abstract games, sometimes the original rule idea comes first, sometimes the available material defines how the rules are created and fixed. This latter mode is quite common in what we call game systems: a set of gaming hardware used to produce new games under its material possibilities. Perhaps the most famous of all game systems is the deck of cards with literally thousands of games through History and Geography. There are other game systems, some traditional, like Dices or Dominoes; some commercial, like Icehouse or Piecepack. We wish to present two new game systems that many people already have in their houses: the chess/checkers set and the Go set. We will also talk briefly about a new way to think about abstract games: rule mutators.

Polyhedron puzzles: combinatorics and groups

JORGE REZENDE, University of Lisbon

Abstract: In this talk we shall discuss the construction of the polyhedron puzzles and, at a very elementary level, the mathematical concepts involved and the possible scientific developments. We shall treat the following topics:

1. Construction of the puzzles using combinatorics.
2. Polyhedron puzzles, symmetric groups and isometry groups.
3. Construction of the puzzles using group theory.
4. Existence of solutions and the problem of counting them.
5. Generalizations.

The Game of Dashavtar

JOSÉ CARLOS QUADRADO, ISEL

Abstract: Hand made Ganjifa Cards reminds everyone about richness of the art work. These cards are made from circular pieces of paper on which intricate designs of Dashavtar (Ten Avatars of God Vishnu) are hand painted.

The paintings have intricate patterns depicting royal lifestyle as well as spiritual beliefs of the people in Asia, dating back to almost the 7th century. The mythological figures are painted with Chitrakatha, Temple or Ganjifa styles. Images belonging to the Chitrakatha style are of bold nature, with the figures depicting some action. Temple style usually portrays deities in a sitting position. Ganjifa is more stylish and depicts the ten incarnations of Lord Vishnu.

The game expansion in Asia had some developments related with the major trade events, as the silk road, and the Portuguese presence in India, among others. Nowadays the game existence supports the preservation of ancient markets with minimal damage to the surrounding ecosystem, tourism activities and large-scale tree plantations. These places provide inspiration and spiritual regeneration. They are a powerful representation of the forces of nature. Ecotourism sustains these resources, not only because they serve as an evolutionary link to our future, but for the pure joy of experience. And all due to the game played in the honor of the Gods.

Draughts and Academie des Jeux

JURGEN STIGTER, TWA

Abstract: How do you know when and where a game was played and how popular it was? The evidences come from written accounts and illustrations, game artifacts found and linguistic analysis. But the reason for mentioning a game - or not - are erratic, so it is very difficult to draw firm conclusions from this evidence. E.g., it may be the case, that chess was a “sexy” game, about which much was written, though it may not have been played much, while on the other hand draughts was often played, but not a game you would like to write about. It would not be interesting to explain its rules, because these were well-known! Following a query from Arie van der Stoep, I went through the many editions from Academie des Jeux (which all contain chess). The earliest evidence of the “flat game” is a frontis in 1723, showing it was played and must have had some popularity, but without reference in the text itself! Can one conclude that chess was less well-known?

Origami's Geometry

LILIANA MONTEIRO, FCUL

Abstract: Origami is the famous Japanese art of folding paper. In this presentation you will find out that there are essentially only seven possibilities for one single Origami fold. These form the Huzita-Hatory Axioms for Origami, and they will be shown to you by the interactive geometry program Cinderella. You will also see that this geometry goes beyond Euclidean Geometry, solving the classic problems of trisecting an angle and doubling a cube.

Mathematical Games

MARIA DAS DORES FERREIRA, University of Minho

PEDRO PALHARES, University of Minho

JORGE NUNO SILVA, University of Lisbon

Abstract: The national championship of mathematical games in Portugal is on its 4th edition, with a great success. But what is a mathematical game? And how can we say that between two different mathematical games, one is more mathematical than the other? We will present a framework that will help us answer these two questions.

Mancala Games in Brazil: is board game a media?

MAURÍCIO LIMA, Origem

Abstract: There is no evidence of the presence of mancala players in Brazil today. Santos Silva, a Portuguese mancala researcher, does not mention a Brazilian presence in his book on Angolan mancala dating from 1995. Lasebikan mentions the repeated introduction of the Nigerian game of Ayo to the city of Salvador in the 1960s in which he himself took part. The Brazilian folk researcher Câmara Cascudo mentions that the black people used to play a game named *A-í-ú* in that city in the beginning of the XX century. Recently, in a attempt of Alex de Voogt, this game was only found in a museum of West African culture in that same city and players appeared to be recent African immigrants. There are many cities in Brazil created by African descendents. A research in this subject in that places will preserve the memory of a particular aspect of the culture they brought to the country. It will happen in 2008 as a project of research to the Pontifícia Universidade Católica de Minas Gerais.

Cooperative Strategies in Board Games

PAULA FALCÃO, KDP Kepler

Abstract: Despite the traditional competitive approach to all kinds of games - including board games -, since John Nash introduced the cooperative dynamics to the theory of games, the search for alternatives to a strategy for cooperative, amusing and challenging board games has been increasing.

This paper has two main purposes:

1. To conceptualize cooperative, competing and competitive board games.
2. To show the main challenges of playing cooperative games, namely:

- a) Change in strategic pattern - how to reorganize my thinking in order to win with, meaning we win cooperatively with other people, instead of winning against them?
- b) Challenges of interpersonal relationship - how can I articulate my relationships in order to achieve both my goal and the other people's goals?
- c) Change in paradigm - is it possible to build a world where everyone wins together?

With this in mind, I will be using the work of Nash, Terry Orlick, Fábio Brotto and my own experience with board games in training and development of people as the basis for my lecture. I will show some cooperative board games to the people present and explain how the third generation games such as Tantrix, Carcassonne, Catan and San Marco can be adapted for a cooperative strategy.

History, Exhibitions and Activities - Board Games in a Museum context

PAULO DIAS, Museum of Science, University of Lisbon

Abstract: Museums of science are not schools and teaching scientific content is not among their objectives. Their mission encompasses stimulating awareness towards scientific processes, while at the same time providing a social and historical context.

When kids play abstract games they contact with a reasoning method. This is also a main goal in conventional mathematics. This is the reason why abstract games fit a museum of science like fish in water.

The Museum of Science delivers educational programs and activities in the areas of Mathematics, Experimental Sciences and Astronomy for school groups of all ages. As far as Mathematics is concerned, a set of challenges and board games is proposed to stimulate abstract reasoning in visitors - namely Amazons, Pawns, Take-away, Mancala, Hex, Traffic Lights, Slime Trail, 5 in a row (3-D). In this communication, I will present a few of these board games - namely Take-away, Traffic Lights, Slime Trail, and discuss their importance for the Museum.

On the use of the chess game to represent famous battles

PEDRO PALHARES, University of Minho

Abstract: The game of chess has attracted great passions throughout its history. Some of its enthusiasts have pushed chess in order to represent different kind of situations. Lewis Carroll used a chess game to be the central

element of one of Alice's stories. The struggle between good and evil (the latter represented by the devil himself) has been the theme of a series of problems. There were also some attempts to use chess to represent battles. This has occurred in the end of the 19th century and beginning of the 20th century in a period where the first wargames were in fact appearing (although apparently were yet too expensive to become really popular). In this presentation I will look into two examples of these trials, examining the way the main problems linked with this representation were solved.

Goths, Vikings and Hanseatic Town—gaming pieces from archeological excavations in Elblag, Poland

PIOTR ADAMCZYK, The Museum of Archeology and History in Elblag

Abstract: Presentation will show some archeological findings of gaming pieces which can be found in Museum of Archeology and History in Elblag, Poland. They are mostly unknown outside Poland.

There are three main sites of our archeological excavations: very big Gothic cemetery in Weklice (80-300 A.D), Viking settlement/trade emporium: Truso (VIII-XI cent. A.D.) and Old Town in Elblag (since XIIIth century). Excavations, started in early 80's, brought us so far many toys and gaming pieces, made of different materials, such as: wood, amber, bone, horn, stone.

A Historical Survey of Combinatorial Game Theory

RICHARD NOWAKOWSKI, Dalhousie University

Abstract: Combinatorial Games (essentially games with perfect information that have no chance devices like dice) have been around for millennia. Each successful game has had its proponents who discover tricks, heuristics and strategies of the game—witness the number of books written on Chess, Go and Checkers, for example. However, the first complete (mathematical) analysis of a non-trivial game did not appear until 1902. It was not until the 1930s that a more general theory was teased from this paper. I will present a brief history of this young field including the people and the main ideas.

Education via a board game: understanding forecasting basics

ROZAINUM ABDUL AZIZ, University Technology Mara

Abstract: The purpose of this presentation is to put forward a “learning and teaching” strategy through a board game, which we call “nun-forecaster”. The whole idea is to introduce forecasting to students. Nun-forecaster is a metaphor to camouflage learning and teaching, through an activity.

This game symbolizes the significance of planning, then we go deeper into

forecasting in a business or even in our everyday life. The game takes us through a journey of ups and downs and uncertainties where we are not sure of what lies ahead so we are forced to accept circumstances here. Nevertheless, we must proceed till we finish.

In the events, each of which we can formulate through mathematics and explain behavior, consequences etc. so as to offer insights and solutions. The game is like “snake and ladder” in the “ups and downs” squares. This game tests perseverance, patience and educators.

Players can be school children, college and university students to academicians and researchers. Each group with different levels of understanding. Companies can use this as ice breaker for their training sessions. Schools can use this to stimulate the class and adopt a new approach of learning and teaching—i.e. use the board game; a platform to develop and build knowledge from.

We hope education can also be acquired through a board game like this and that it should not be played just at home with family members and friends leisurely, but bring it out in a formal class in a school, in a university and at work. Hence, teaching and learning can be made more interesting and more stimulating.

To the high level readers, an insight into a mathematical model proposed is given in concept with the hope that both academicians and practitioners will progress in achieving forecast accuracy. The model explains the use of probability distribution against point forecasts, the cost function and fundamentals of Bayesian methodology in approach.

Previous observations through pilot study, postal survey, case study and a follow-up survey form as a basis in formulating the mathematical model explained. In writing the paper we attempts to give explanations for and cost effects of imperfect forecasts, an oversight which frequently occurs to management.

Board game, Astronomy and Astrology—a new invention of the King of Mysore

RANGACHAR VASANTHA, Sri Krishnadevaraya University

Abstract: Pachisi, the national game of India is the classic and most interesting of all the race games, in which two or more players toss the dice to maneuver their pieces to get “home” first. The incredible pleasure of this game is probably due to the fact that the game combines both luck and skill.

Krishnaraja Wodeyar III, the Maharaja of Mysore (1794-1868 AD), a competent mathematician and a philosopher invented a new type of Pachisi game for nine players combining geometrical shapes linked with nine planets and twelve zodiac signs. Placements of the pawns are in accordance with the astrological science, prearranged with the planets. When dice are rolled, the numbers on the dice directs the pawn to be placed on a particular place in the zodiac sign, where each planet is the lord of the respective zodiac sign. My paper makes an in-depth investigation and analysis of this mysterious Pachisi game, which is complex, and demanding.

Ancient American Board Games, I: From Teotihuacan to the Great Plains

THIERRY DEPAULIS, Paris

Abstract: Besides the ubiquitous patolli—a race game played on a cruciform game board—the Aztecs had obviously a few other board games. Unfortunately their names have not been recorded. We owe to Diego Durán, writing in the last quarter of the 16th century from local sources, some hints of what appear to be a “war game” and a second, different race game that he calls “fortuna”. A close examination of some pre-columbian codices shows a rectangular design with a chequered border, together with beans and “draughtsmen”, which has correctly been interpreted as a board game. Many similar diagrams can be seen carved on stone in temples and public places, from *Teotihuacan* (c. 4th-7th century AD) to late *Toltec* times (9th-12th century AD). Of this game too we do not know the name. It has tentatively been called *quauhpatolli* (“eagle- or wooden-patolli”) by Christian Duverger (1978)—although this seems to have been the classic post-conquest Nahuatl name for the game of chess—or, not much better, “proto-patolli”, and more concretely “rectángulo de cintas” (rectangle of bands) by William Swezey and Bente Bittman (1983).

The lack of any representation of this game in all post-columbian codices, as painted by Aztec artists commissioned by Spanish scholars interested in the Aztec culture, is clear indication that the game had disappeared before the Spanish conquest, at least in central Mexico. No Aztec site shows any such board. Fortunately this game had survived until the 20th (and 21st!) century but located in the *Tarascan* country, now the state of Michoacán. It was discovered, unchanged, in a *Tarascan* (Purepecha) village by Ralph L. Beals and Pedro Carrasco, who published their find in 1944. At that time Beals and Carrasco had no idea the game was attested in early codices and *Teotihuacan* to *Toltec* archaeological sites. In Purepecha the game is called *k'uillichi*.

There is evidence of an evolution that led to a simplification of the game: less tracks, less games men (in fact only one per player, while *k'uillichi* has

four), and less “dice”. From a “complex” race game, the new debased version turned to be a simple single-track race game with no strategy at all. It is possible that this process took place in Michoacán (a few examples of the simplified game were found in some *Tarascan* villages.) Also it seems the widespread use of the *Nahua* language, which the Spanish promoted, led to calling the game and/or its dice *patol*. As it was, *patol* proved to be very appealing and became very popular in the Mexican West, finally reaching the Northeast, that is the present Northwest of Mexico and Southwest of the United States.

This seems to have been a recent trend, since its progress was observed with much detail by missionaries living in close contact with the Indians along what was called the “Camino Real”, the long highway which led from western Mexico to what is now New-Mexico in the U.S. The Spanish themselves seem to have helped the game in its diffusion, unaware of its presence. It is clearly with the Spaniards that the *patol* game, sometimes also called *quince* (fifteen), the name of an extremely popular gambling game with cards, reached the American Southwest and settled in the Pueblo and the Zuni countries. It is there that some newcomers, coming from the North or from the Great Plains, and getting in contact with the Pueblos in the 18th century, found the game and took it over. The *Kiowas* and *Kiowa* Apaches are noted for their *zohn ahl* (or *tsoñä*) game, while the *Arapahos* call it *ne'bäku'thana*. A careful examination of *zohn ahl* shows that it has kept the basic features of an ancient game that came—in Spanish times—from Mexico and may have been popular under *Teotihuacan*. Its spread northward - through the *Tarascan* country - is, hopefully, well documented.

Board Games in Ancient Ephesus

ULRICH SCHÄDLER, Musée Suisse du Jeu

Abstract: In collaboration with the Austrian Archaeological Institute a project has begun in 2007 with the aim to produce a complete documentation of the board games to be found in the ancient city of Ephesus (Turkey). The paper discusses some preliminary results. The boards of such games appear as incised patterns scratched into the marble pavements of buildings, colonnades and streets, but also as professionally cut marble gaming tables. During the first campaign of 4 weeks in July 2007, 240 patterns have been found, 15 of which in the basilica of St. John (6th century AD) outside the Graeco-Roman-early Byzantine town. Two points have to be stressed:

1. There are many “wheel”-patterns which raises doubts concerning their generally accepted interpretation as “round three men’s morris” boards.
2. The boards in the basilica of St. John differ completely from those in

the Ephesus itself and belong to games known from the Arabic-Islamic world, including “nine men’s morris”.

Revival of Traditional Board Games - Prospects and Retrospects

V. BALAMBAL, University of Madras

Abstract: India, especially Tamilnadu is home for many traditional board games like Snake and Ladder(Paramapadam), Tiger and Goats (Adu Pullattam), Pit and Pebble game (Pallankuzhi or Mancala) and Ludo (Tayakattam). Most of these games were played by the rural people just for recreation during rainy season when they were unable to go for their agricultural activities or during their lunch break during working days. They never used any “made boards”, and used the available materials for playing the games. In course of time, the people showed very little attention to these games.

In recent times, there is an awakening regarding the games due to interest shown by some researchers like present author. The research work undertaken in this field was really an eye opener. Slowly like a movement, the interest for the games is felt like an under current. The author took it a project to study whether a revival was possible. More than the rural areas, the interest for traditional games is felt and infused by different actions in the cities and towns too.

The out come of the efforts is very encouraging. The revival of board games is made possible by following certain practical steps:

1. Creating awareness among the students about the board games by conducting simple and interesting workshops.
2. Introducing Mancala in the Primary school level to teach Arithmetic.
3. Including it in the local festivals.
4. Conducting periodical Work shops for the teachers and parents.
5. Making the Physically Challenged and Special children play the traditional board games as a therapy.
6. Enriching the local museums with game boards and game pieces with some literature.
7. Conducting work shop for the Museum guides about Board games.
8. Involving students in board games during Summer Camps.
9. Organising Board Games competitions not only for students but for people of all ages.

10. Writing articles in popular news papers and magazines about these games with nice illustrations.

These above attempts have been proved to be fruitful in the metropolitan city of Chennai in India and it has given a hope that the traditional board games which have many uses and values could be well revived. This paper is based on the personal experiences of the author who is very hopeful of revival of the games with the cooperation of the children, parents and teachers.