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# GAMBLING RESEARCH REVEALS

## Conference 2011: "Engaging the Big Questions in Gambling Studies"

The Institute is pleased to announce that the theme for Conference 2011 will be "Engaging the Big Questions in Gambling Studies." The event will take place Friday, April 8 and Saturday, April 9, 2011 with an opening reception during the evening of April 7th at the Banff Centre in Banff, Alberta, Canada.

Big questions to be discussed will relate to a wide variety of topics. Examples of session topics include:

- Issues related to national gambling oversight
- Understanding and preventing gambling-related scandals
- Evaluation of studies of the socio-economic impacts of gambling
- National and international standards for responsible gambling
- Coming to grips with research methodology uncertainties
- Resolving dilemmas in treatment and prevention of problem gambling

Co-organizers of the 2011 conference program are Dr. Garry Smith (Gambling Research Specialist, Faculty of Extension, University of Alberta) and Dr. Brad Humphreys (Chair in the Economics of Gaming, Department of Economics, University of Alberta).

Additional conference details, including the registration form, are posted on the conference web page with program updates as they become available.

ENGAGING THE Big Questions 2011 IN GAMBLING STUDIES

### Call for Poster/Oral Presentation Submissions

Poster and oral presentation sessions will be held during the conference. Researchers should email a 150-200 word abstract to **Dr. Garry Smith** at **garry.j.smith@ualberta.ca.** Abstracts should include: title of research, names of author(s) with the presenting author underlined, author affiliation, and contact information. The submission can address any area of gambling, although research on social and economic impacts of gambling, gambling regulation/public policy and the efficacy of responsible gambling initiatives is encouraged.

A small number of submissions will be accepted as 15 minute oral presentations so please indicate whether the presenting author would be willing to present an oral presentation instead of a poster. A best poster/presentation award will be adjudicated during the conference and awarded during our closing session. Submission deadline is **Friday, February 4, 2011** (with peer review process and decision notifications by **February 18, 2011**).

*All presenters must register for the conference.*

The Alberta Gaming Research Institute is a consortium of the Universities of Alberta, Calgary, and Lethbridge. Its primary purpose is to support and promote research into gaming and gambling in the province.*

OUR MISSION

To significantly improve Albertans' knowledge of how gambling affects society

ALBERTA GAMING RESEARCH INSTITUTE

## Gambling researchers at the University of Lethbridge

Since September, 2010 a diverse group of individuals at the University of Lethbridge sharing a common interest in gambling-related research has been meeting monthly. These informal gatherings provide opportunities to establish connections across academic disciplines, share information on topics of mutual interest, and lay the groundwork for developing collaborative initiatives. To be alerted concerning the dates of future group meetings, contact meeting organizer Jennifer Arthur **<jennifer.arthur@uleth.ca>.**

## Mathematician Dennis Connolly explains expected value (EV) of lottery prizes

At the University of Lethbridge gambling research meeting of October 21st, 2010, Dr. Dennis Connolly presented an informative introduction to the mathematics of "Expected Value" as applied to a variety of gambling games. Connolly began his discussion by providing the following definition of Expected Value (EV) for a particular bet as follows:

**EV = (Amounts won x corresponding probabilities) – (Amounts lost x corresponding probabilities)**

For example, if a $1 bet on a winning number (1/37 chance of winning $35; 36/37 chance of losing $1) on a 37-number roulette wheel pays $35, the EV is:

$$\begin{aligned} EV &= \$35\ (1/37) - \$1\ (36/37) \\ &= -\ \$\ 1/37 \\ &\approx -\ \$\ 0.03 \text{ per } \$1 \text{ bet} \end{aligned}$$

Make this bet 100 times and expect to lose on average $3; Make this bet 1,000 times and expect to lose on average $30; Make $10 bets 100 times and expect to lose on average $30.

Connolly provided a glimpse into the significantly more complex calculations required to determine the EV for a 6/49 lottery game ticket[1] after he also examined the comparatively straightforward EV probabilities of 50/50 prize raffles and the "come line" in the casino table game of craps. In order to make the lottery calculations easier to follow, he excluded EV associated with secondary lottery prizes.

In order to calculate the EV for a single $2 lotto 6/49 ticket, Connolly explained that calculations must also take into account the possibility that other winning tickets are sold, that only about 50% of total ticket sales are set aside for top prize, that the odds of having matching winning numbers are 1 in 14-million, and that the total number of tickets sold for a draw is variable.

Based on these inputs, a graphic representation of the resultant EV equation shows that EV *increases* as the number of $2 tickets sold increases. Eventually, the EV approaches -$1 which is the maximum possible value for a standard lottery draw. Connolly briefly explained the modifications to his 6/49 calculations to account for prize rollovers[2] should the top lottery prize not be won. Interestingly, the EV becomes relatively higher for lottery ticket in a draw that hasn't been won for several consecutive draws since it includes the added value of major prize rollovers.

*Dennis Connolly is a longtime faculty member in the Department of Mathematics & Computer Science at the University of Lethbridge. His research interests include probability and applied statistics. He has also previously completed an Institute-funded research grant entitled "Impact of statistical knowledge on gambling attitudes and behaviour of university students".*

[1] A lotto 6/49 ticket comprises six distinct integers chosen from 1 through 49. The lottery corporation randomly draws six numbers, without replacement from the set. A ticket holder must have these six drawn numbers (in any order) to win or share the top prize.

[2] Prize "roll-overs" can change the EV. In many lotteries, if there is no top prize winner, the major prize amount that could have been won is then added to the next lottery. The EV increases immediately for this second lottery.



Your comments and queries are welcome either by E-MAIL: abgaming@ualberta.ca
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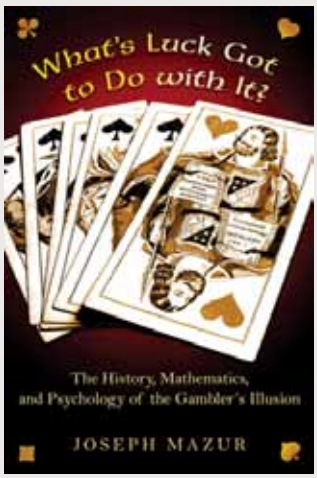
## FROM THE LIBRARY... recently published materials about the mathematics of gambling:

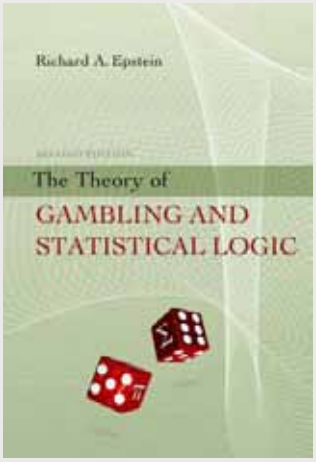



**Mazur, J. (2010). *What's luck got to do with it? The history, mathematics, and psychology behind the gambler's illusion*. Princeton, NJ: Princeton University Press.**

Mathematician Joseph Mazur explains the mathematics behind gambling--including the laws of probability, statistics, betting against expectations, and the law of large number—and describes the psychological and emotional factors that entice people to put their faith in winning despite its mathematical improbability.

**Gould, R. J. (2010). *Mathematics in games, sports, and gambling: The games people play*. Boca Raton, FL: CRC Press.**

This work by Ronald J. Gould was originally developed for a freshman mathematics seminar but it can also serve as a reference for studying probability or statistics. It is likely to be of greatest value as a reference for mathematicians who are unfamiliar with the probabilities associated with gambling or applying statistics in sports.




**Epstein, R. A. (2009). *The theory of gambling and statistical logic (2nd ed.)*. Burlington, MA: Academic Press.**

This is a revision of Richard Epstein's classic book on gambling. Its mathematical analysis covers the full range of games from penny matching to blackjack, from Tic-Tac-Toe to the stock market. He even considers whether statistical inference can shed light on the study of paranormal phenomena. The book is written at a fairly sophisticated mathematical level and a background in upper-level undergraduate mathematics is helpful for understanding this work.

## Dr. David Hodgins Receives NCRG Scientific Achievement Award

Alberta Gaming Research Institute node coordinator Dr. David Hodgins of the University of Calgary has been selected as the 2010 recipient of the U.S. National Center for Responsible Gaming (NCRG) Scientific Achievement Award. Dr. Hodgins was honored at the awards luncheon on Monday, November 15, 2010.

**SEASON'S GREETINGS**

Warmest wishes for a joyous holiday season and a new year that's filled with peace and prosperity.