ORSP Newsletter

May 1997

Sen. Gloria Macapagal-Arroyo Inducts ORSP Board of Officer for 1996-97

The ORSP Board of Officers was formally inducted into office last January 14,1997 at the Ciudad Fernandina. Sen. Macapagal-Arroyo was the keynote speaker and inducting officer.

In her speech, Sen. Arroyo explored the many applications of Operations Research in the government. She says that decisions are best made when OR tools are used along with the consideration of many qualitative factors.

The 1996-97**Board of Officers** are:

President	Dr. Aura Matias
Vice President	Dr. Cleta Milagros Acebedo
Secretary	Prof. Mary Ann Capistrano
Treasurer	Mr. Lauro de Vera
Board Members	Mr. Samuel Cruz
	Mr. Edwin Pineda
	Dr. Olegario Villoria Jr.

The Board also made the following appointments:

Committee Chairpersons

Finance	Mr. Larry de Vera
External Affairs	Mr. Edwin Pineda
Programs	Mr. Ramon Merino
Research and Publications	Dr. Cleta Milagros Acebedo
Student Affairs	Mr. Dennis Beng Hui
Membership	Prof. Mary Ann Capistrano

Publication Editors

Philippine Journal of Operations Research	Dr. Cesar Tapia
ORSP Newsletter	Dr. Cleta Milagros Acebedo

(Pictures were taken during the ORSP Induction of Officers. On the left are some of the officers with Sen. Macapagal-Arroyo and on the right are the members who witnessed the ceremonies.)

ATENEO wins Seventh OR Quiz Contest

The 7th ORSP Quiz Contest was held at Adamson University last March 8,1997 courtesy of the I.E. Department of Adamson University. Dr. Aura Matias from UP-NEC and Mr. Sam Cruz from San Miguel Corporation served as the host and quiz masters of this event.

Ateneo de Manila bagged its fourth OR Quiz title in the 7th Inter-Collegiate OR Quiz Contest. University of the Philippines took the second place while Mapua Institute of Technology landed third.

Other participating schools were De La Salle University and Adamson University. The Board of Judges was chaired by Dr. Cleta Milagros Acebedo (DLSU) with Prof. Marlene Gutierrez (UP), Prof. Jonathan Ng (Ateneo), Prof. Juanito Chan (MIT) and Prof. Ruel Fajardo (Adamson).

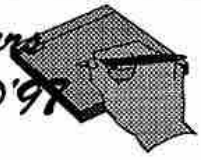
Student Federation held the Second Student Congress

The second Student Congress on OR/MS, a joint activity of the ORSP and the Federation of ORSP Student Chapters, took place last March 8 at the Adamson University. The convention started at 9:00 AM and was participated by approximately 230 students coming from Adamson University, Mapua Institute of Technology, University of Santo Tomas, De La Salle University, and Central Colleges of the Philippines.

Participants were treated with a seminar entitled "Simulation and its Application" which was delivered by Pro Model representatives. The seminar dealt with the importance of performing simulation in real systems and how it is able to improve productivity and efficiency of systems.

To cap off the seminar, a software demonstration of Pro Model was shown to illustrate the ease of building simulation models and running them.

Second Call for Papers for ICORMS-ICORD'97



The International Federation of Operational Research Societies (IFORS) and ORSP sent out its second call for papers for the concurrent **"International Conference on Operations Research/ Management Science" and the "International Conference on Operations Research in Development".**

The conference aims to bring together researchers, practitioners and decision makers, educators and academicians to interact and discuss issues dealing with OR in their respective field of application.

Abstracts of at most 200 words are welcomed until May 30, 1997. Notice of paper acceptance will be made by July 30,1997 and full papers must be received by September 15,1997.

Venue will be the Edsa Plaza Hotel, Philippines from November 25 to 18, 1997.

ORSP sponsors a Seminar on "Quantitative and Computer-Based Techniques in Manufacturing and Distribution"

The Society and the National Engineering Center jointly sponsored a seminar on Quantitative and Computer-based Techniques in Manufacturing and Distribution at the National Engineering Center, UP Campus, Diliman, Quezon City last January 19-31, 1997. The course is part of the continuing engineering education series. It aims to introduce the participants to the basic OR tools and techniques with the aid of computer softwares in manufacturing and distirbution applications.

The 3-day course included forecasting, facilities planning, production planning and scheduling, inventory management, distribution management and information technology.

-1 = 1 = 2, right?

by Dr. H. Arsham, University of Baltimore

Imprecise mathematical thinking is by no means unknown in OR. But, argues H. Arsham, we need to think more clearly if we are to keep out of trouble.

Our culture has always reflected a lack of comfort with the notion of zero. Witness humour such as "Two plus zero still equals two, even for large values", and popular cultural retorts of similar tone. A similar uneasiness exists regarding infinity. Such lighthearted comments are a reflection of an undying awkwardness in manipulating equations where the notion of zero presents itself. The problem is hardly limited to young students grappling with an idea which has often been mangled. It can frequently be found as well in prestigious texts published by mainstream publishers.

Dividing by zero is a sin!

Reading the fifth edition of a book (Introduction to Management Science, by B.W. Taylor III, Prentice Hall, New Jersey, 1996), I found the author dividing 2 by zero in a Simplex tableau performing a column ratio test, with the stated conclusion, 2 / 0 = infinity. A silly typographical error? Confusion? Wilful sin? A telephone call bringing the obvious error to the attention of the publisher for correction in future editions was met with an astonishing return call from the editor of the text still insisting that the result 2 / 0 *was* infinity! Although both the author and editor insist on this computational outcome, they nonetheless somehow decline to continue the Simplex calculation based on this result, contrary to the logic of their conclusion.

Dividing by zero can get you into trouble!

Dividing by zero is a mathematical sin! If we persist in retaining such errata in our educational texts, an unwitting or unscrupulous person could utilize the result to subsequently show that 1 = 2, as follows:

$a^2 - a^2 = a^2 - a^2$ for any finite a
$a(a-a) = (a-a)(a+a)$ Dividing both side by (a-a) gives
$a = 2a$ Now, dividing by a gives
$1 = 2$ Voila!

This result follows directly from the conclusion that it is a legal operation to divide by zero! With the editor still unconvinced, in discussing the issue this writer suggested if you divide 2 by zero even on a simple, inexpensive calculator, the calculator will indicate an error condition.. Could this cheap calculator know something the editor does not? Viewing this issue from the perspective of limits, when considering Lim(2/a) as a approaches zero (not equal to zero), neither the left nor right limit exists. In other words, if one divides 2 by a very small positive number close to zero, the result is a very large positive number while dividing by a very small negative number close to zero produces a very large negative number. Since the two results are not equal, therefore the limit does not exist. Neither does the limit of each side exist. Since the publisher confesses "mathematically rigorous techniques" for the text in their management catalogue for 1996 and basks in the claim of being a "widely adopted" text, it is all the more important to bring this abysmal error of dividing by zero to the attention of the OR community. This is not a simple question of chastising one author or one publisher. Unfortunately I find this is not at all an uncommon practice. And if an educator professes division by zero as an appropriate mathematical practice, we should not be surprised to see this error persist among his students just as the author himself learned this abysmal practice from his own teachers. The author lists over 20 educators as reviewers, including the editor. This is a painful, vivid demonstration of how widespread this misconception is. It should also be noted that this particular text and author are cited only to illustrate a widespread problem. By appearance, the text otherwise has much to recommend it, both for its scholarship, application, and readability.

The notion of zero was introduced in the Middle Ages by Arabian scholars as a superior mathematical construction compared with the then prevalent Roman numerals which did not contain the notion of zero. When these scholarly treatises were being translated by European accountants, they translated 1, 2, 3, ... and upon reaching zero, pronounced, "empty." Nothing! The scribe asked what to write and was instructed to draw an empty hole, thus introducing the present notation for zero. It may be considered frivolous hyperbole to suggest that the demise of the Roman Empire was due to the absence of zero in their number system, but one can only ponder the fate of our civilization given the difficulty our culture seems to have with the presence of zero in our number system.

Natural numbers are real numbers. One car, two trees... What about negative numbers? The negative sign is an extension of the number system used to indicated directionality. Sacrilegious as it may sound on first impression, the notation of zero is at heart nothing more than a directional separator. It is in actuality, "nothing." A numerical value (other than zero) divided into "nothing" inherently results in nothing. This is not a simple calculation exercise. Rather it reaches to the nature of the underlying physical reality.

How to prove that 1 = -1

Another common error is found in other textbooks which announce the finding that the square root of 4 is ± 2. When this writer confronted an author guilty of this practice observing that one number cannot be equal to two different numbers, the reply received was "check it for yourself by squaring both sides." He followed with self-satisfaction, "you see!". This writer advised that following his argument one could also demonstrate that one is equal to minus one. An observer witnessing this exchange jumped in volunteering the results of the computation performed with a calculator as producing a single result of plus 2 declaring "he is right." Solving the equation $x^2 = 4$ has two solutions, $x \pm \sqrt{4}$ and concludes that this latter result to ± 2. This is the genealogy of this error. There is a clear distinction here and an important difference which the careful reader will note.

Errant views

Our conclusion is that these two errant views are widely held among authors of OR texts and unsurprisingly, by their students. Sadly, these persistent errors do not exist in isolation in a classroom or academic text. Important conclusions are inappropriately drawn after a witting or unwitting division by zero, leading the calculator to subsequently conclude, "therefore ..." as he or she goes on to some consequent insight. This writer used the $1 = 2$ and $\sqrt{4}$ examples as experiments in every one of his classes. Inevitably, almost half of the class responds incorrectly. We would suggest readers who teach try a similar experiment in their classes.

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Announcements

Please remember to accomplish the Membership Renewal Form and send it to ORSP Secretariat c/o Prof. Annie Capistrano, ME Department, Ateneo de Manila University, Loyola Heights, Quezon City 1108. Details on the payment of the membership fee are found on the same Form.

We need more newsletter articles. Any significant OR news (local or international), announcements views, and the like may be sent to Dr. Mel Acebedo, telefax: (632) 5240563, email:coecla@coelan.dlsu.edu.ph.

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