Dana Meadows Award Presentation
R. Joel Rahn, Co-ordinator of the Dana Meadows Award Committee

The Dana Meadows Award is given for the best paper, **by a student**, presented at the Annual Conference. The Award was first presented in 2001, at the Atlanta Conference, to honor the life and work of Dana Meadows, who died in February of that year, after a long and brilliant career in education and research focused on a systems approach to social and environmental issues. From her contributions to *Limits to Growth* to her later writings in *The Global Citizen*, Dana was an inspiration to generations of students and researchers in System Dynamics.

The Award is instituted by the Society to bring recognition to the very best student work and thereby, to inspire students to contribute to the growing body of theory and applications of System Dynamics-inspiration that Dana demonstrated throughout her time with us.

The Dana Meadows Award is funded through an endowment established by the Society, initially by a generous donation from Jane and Allen Boorstein to found the Award in 2001, and by many subsequent donors whose support the Society gratefully acknowledges. Currently, the winner receives a cash prize of $500 as well as conference registration and a travel stipend. As in previous years, Pegasus Communications has contributed a book prize to each of the Honorable Mentions as well as the winner. The members of the selection committee for the 2006 Award are Bob Cavana, Andy Ford, John Morecroft, Krystyna Stave, John Sterman and Erich Zahn.

In order to maintain the extraordinary suspense building up to revealing the winner of the Award, I will start with presenting the Honorable mention Awards for 2006. I ask each recipient to come to the stage as I announce their names and ask them to remain on stage for the announcement of the Award winner.

The Honorable mentions in the Dana Meadows Award competition for 2006 were extremely close in their ratings. In reverse alphabetical order, they are:

Burcu Tan, The University of Texas at Austin for "A Dynamic Analysis of Long Term Impacts of Genetically Modified Crops".

To paraphrase several reviewers, overall this is a very nicely written paper which describes in detail the relationship between genetically modified crops -- specifically Canola -- the application of herbicide, and the combined effects on weed tolerance due to the hybridization of the GM crop with weed species and the emergence of herbicide tolerant weeds. This is a very interesting paper, well researched and theoretically sound. The topic is interesting and the analysis thorough.

Jeroen Struben, MIT for the paper "Identifying challenges for sustained adoption of alternative fuel vehicles and infrastructure".

Reviewers commented that in a spatially explicit model of infrastructural development and use of vehicles fuelled by alternative fuels, the spatial nature of the model is critical for understanding the potential for widespread adoption of alternative fuels among a heterogeneous landscape and population. For this reason, the model described by the authors breaks new ground. It was noted, however, that "the model is complex and it is a challenge to present the paper so that the audience both get a deeper understanding of spatial distribution and the particular problem." A challenge that the paper met in the eyes of the Committee.

Willem Geert Phaff, Delft University of Technology and Burak Guneralp, from the University of Illinois at Urbana-Champaign for the paper "Investigating Model Behavioural Analysis: A Critical Examination of Two Methods".

As reviewers remarked, although a highly technical paper – difficult for those not specialized in the field of loop dominance analysis – the very detailed and clear description of the comparison and the choices made on the way, make the paper and its results understandable. The results are interesting, since discrepancies between the two methods are found. Since this is a line of work in progress, future lines of research are pointed out. This is a well-done model, parsimonious and well grounded. It deals with an important issue, and is well written.

Out of the over 30 student papers submitted for this year's awards, these were regarded as excellent papers and worthy contributions to System Dynamics. The authors are to be congratulated for their efforts and their success in analyzing and providing insight into significant dynamic issues.

Enough suspense, this year's winner of the Dana Meadows Student Award for the best student paper presented at the annual conference is:

Ozge Karanfil , currently at the Centre for Nonlinear Dynamics, Department of Physiology, McGill University, Montreal. Her paper, based on work done at Bogazici University, Istanbul, is entitled "A Dynamic Simulator for the Management of Disorders of the Body Water Metabolism".

This paper presents modeling of a closed-loop system dynamics model for body water disorders, and particularly for Antidiuretic-hormone-induced hyponatremia (water intoxication) which is primarily acquired by patients during hospital stay where intravenous fluid infusions occur. It builds on the model related to sodium and water- related metabolic activity originally developed by Arthur Guyton, the father of modern physiology. The structure is effectively presented in stages over six pages. Although there are many technical medical concepts in the model they are clearly explained and one gets a real sense of the body's intricate self-regulation of fluid from the informative text accompanying the feedback loops.

Among the strengths of the paper are:
   - Thorough coverage of real data sets and model simulation output to ensure model behavior is in line with reality,
   - Consistent and detailed focus on results presentation, discussion and interpretation,
   - And in the words of one reviewer, "It opens the road to SD for the rest of Arthur Guyton's circulatory system model developed in the 50's!"

This reviewer also had only one Recommendation and I would like to share it with you:
   - Please work on the rest of the Guyton model! This is absolutely exciting work for many circulatory, renal, pulmonary and cardiovascular diseases where current treatment is empirical and does not have any means of simulation-driven treatment optimization.

As another reviewer commented, "This is a quality study with solid modeling. It is well presented. The comparison with other work provides the confidence in the model that makes it useful. The gaming discussion would normally be considered peripheral, but here it adds to the integrated "discovery" process that the introduction promises. The conclusion ties it all together quite nicely. An excellent paper."

 In summary, the Award Committee considered this to be an outstanding paper, an exemplary contribution meeting the objectives and the high standards of the Dana Meadows Award.