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 2007 Award are Bob Cavana, Andy Ford, John Morecroft, Joel Rahn, Krystyna Stave, and Erich Zahn.

In order to maintain the breathtaking suspense building up to revealing the winner of the Award, I will start with presenting the Honorable mention Awards for 2007. I ask all recipients 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 2007, in order of submission to the Conference, are:

Willem Geert Phaff, Delft University of Technology for "Visualizing The Effects of Nonlinearity by Creating Dynamic Causal Diagrams"

This paper was rated Extremely High and High by the two Conference referees on all quality variables. The paper describes a structured approach to the development of tools to achieve a more intuitive understanding of non-linear behavior, specifically shifting loop dominance. Although the application is focused on rendering eigenvalue elasticity analysis more directly related to loop behaviour, the structure of model, solver and analyzer components can be applied to any analysis technique.

Applying the method to the Yeast model and the Market Growth model, the author illustrates the linking of loop behavior, defined in terms of edge gains (i.e. for a single cause-effect relation), and real and overall eigenvalue elasticities, to causal structure by clever use of color and intensity' The linkages are illustrated in the paper by a selection of well-timed snapshots of relevant causal loop diagram fragments.

The paper manages to take dynamic insight to a whole new level of understanding behavior: from behavior over time of 'important' variables to behavior over time of loops (or edges as parts of loops). A weakness of the paper is perhaps that too much space was devoted to the general structure of the model-solver-analyzer components and some of the programme conceptualization issues at the expense of further insight into a better understanding of how to exploit the eigenvalue-based analysis to understand behavior and the implications for policy development and analysis.

One reviewer wrote: This is a well-written paper (no unnecessary information, illustrative figures, relevant additional information) that

clearly shows the reader the specific contribution of the tool. This is something every dynamicist should see. Usually we try to capture causal relationships in formulas; this is the “structure causes behavior” part. The tool presented here allows us to look at the “behavior reveals structure” part.

Firat Incioglu, Industrial Engineering Department, Bogazici University for “A dynamic simulation model for long-term hypertension progression”

In this paper, a model is built to investigate the dynamics of blood pressure over the life span of a human being. In comments on the quality of the model presentation and simulation analysis, one reviewer wrote: In my view both are high. The author seems to have a firm grasp of the medical concepts involved in hypertension and the control of blood pressure and fluid volume. A feedback representation of these concepts is cleanly presented in the first half of the paper. The key feedback loops are clearly identified and explained in figure 3.1. The model formulations are thoroughly discussed, culminating in a sophisticated stock-flow diagram. The subsequent simulation analysis is compelling and intelligently organised. In short I consider this to be a very good paper, worthy of consideration for the DMA award

Other reviewers were also enthusiastic about the paper, rating the writing and reasoning quality as high or very high. One reviewer, noting the profusion of medical jargon, yet wrote: “Good paper. I saw feedback and unintended consequences. It seemed like good system dynamics”. While another said that the paper “seems to exhibit excellent modelling techniques”.

Out of the over 50 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:

David Wheat, System Dynamics Group, University of Bergen (Norway). His paper is entitled " The Feedback Method of Teaching Macroeconomics: Is it Effective?"

This paper briefly reviews the context for using feedback loop diagrams to support learning macro-economics. Empirical studies were conducted to test student understanding, transfer of learning and preferences. The focus of the experiments is on the use of the feedback approach to illuminate learning the correct dynamics involved.

In the words of one Conference reviewer: This is an outstanding paper that reflects the careful reasoning and articulate explanation of an important issue. This paper will be of interest to a wide range of attendees. It presents a clear comparison between approaches to teaching economics and presents a series of simple experiments to illustrate the important points made about teaching and learning. It is exceptionally well conceived, well organized and well written.

This paper was rated Extremely High to High on all quality variables and was unanimously recommended for publication in SDR. It gives an exemplary presentation of how to introduce feedback concepts into early teaching in a field not currently familiar with them. As one reviewer remarked, "The paper is very relevant for people who want to use SD as a teaching method for undergraduates. The same method can be applied to other fields apart from macroeconomics."

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.