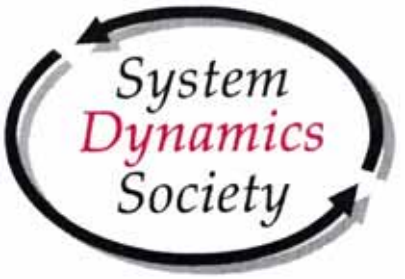


System Dynamics NEWSLETTER

Volume 17 – Number 4 October 2004

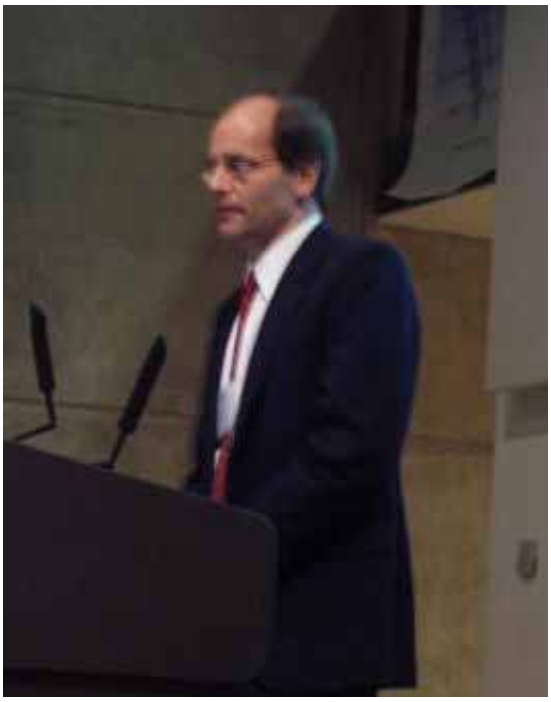
Contents

Thank you

Many thanks to all who contributed their writing, photographs, and information to this issue of the newsletter: Nam-Sung Ahn, Monica Altamirano, Klaus Breuer, Dean Christensen, Brian Dangerfield, Pierre J. Ehrlich, Valerie Gacogne, Andreas Größler, Burak Güneralp, Gary Hirsch, Wouter Jongebreur, Birgit Kopainsky, Corey Lofdahl, Ignacio Martinez-Moyano, Geoff McDonnell, Rutger Mooy, George Papaioannou, Ken Parsons, Anastássios (Tasso) Perdicoúlis, Scott Rockart, Etiënne Rouwette, Nadine Schieritz, George Stamboulis, Silvia Ulli-Beer, Qifan Wang, Khaled Wahba, Yan Xing, Carlos Yepez, and Aldo Zagonel.

From the President

Adapted from the President's Address given at the International System Dynamics Conference in Oxford, England, July 27, 2004.



Society President Bob Eberlein

Dear Members of the System Dynamics Society,

It is an honor for me to present this year's Presidential Address. I would like to share with you my own reflections on the state of both the System Dynamics Society and the field of system dynamics. I will start by providing a brief history of the Society from my perspective, as well as my own introduction to the field of system dynamics. From this vantage point I will talk about both the good and bad things in the state of our community, and the implications I feel these have for the things we need to do going forward.

Overview

The System Dynamics Society was founded in 1983 during a conference at Pine Manor College in Boston. That conference is now referred to as the first conference of the System Dynamics Society, even though it was organized before the Society existed. It was a small conference, consisting mostly of people who knew each other, and during the conference David Andersen, John Morecroft and others decided it was time to start the System Dynamics Society. I was a graduate student at the time and was one of the people who volunteered to recruit new members. The Society was started with the goal of holding an annual conference. A governing body was elected and eventually a journal was started, but more on that later.

The important thing is that 2004 marks the 21st birthday of the System Dynamics Society. In the United States that is the age at which people can legally drink, and it is expected to be a time when the maturity of adulthood takes over from the folly of youth. This is also happening with the Society, at least the maturity part. The governing body is made up of committed officers and members of the Policy Council. We have a professionally run office with two full time people – Roberta Spencer and Jennifer Rowe - as well as a number of part time people. We have a growing membership that is getting very close to one thousand and hopefully will surpass that number in the near future.

The growth and strength of the Society is a reflection on the field. In the end it is the work that matters. Our ability to improve knowledge, understanding, decision making and design of social and other dynamic systems is what we all work toward. The Society is the most visible aspect of system dynamics, representing a gateway to the work in the field through our journal, annual conference, bibliography, web site and member communication.

The State and History of the Society

In recent years the Society has been growing at a rate of about seven percent and is now approaching one thousand members. We have a dedicated professional staff that, until 2004, had been growing relatively quickly and has now leveled off. In fact, the staffing level for 2004 was slightly below that for 2003, and for 2005 we expect to go back to where we were in 2003. We are also much better positioned to achieve a planned evolution, though there is still work to be done on that. There has, in the last several years, been very significant growth in both Chapters and Special Interest Groups within the Society, an indication of the breadth of interest both geographically and for different areas of application.

When the Society was founded it engaged in a fairly minimal set of activities. The basic aim was to hold an annual conference, and that was done by finding someone willing to take on the responsibility of doing a tough job, but the organizers did it and we had small but great conferences. With the aim of increasing the accessibility

of work in the field George Richardson worked extremely hard to launch the *System Dynamics Review* as a self-published refereed journal dedicated to getting out the best work in the field – the first issue of which was published in 1985. With growing membership there came growing administrative tasks and at about this same time Julie Pugh volunteered to act as the Executive Director of the Society. It was an unpaid position for which Julie worked very hard and one of the special challenges was trying to both understand and follow up on the usually vague decisions of the Policy Council.

In 1991 publication of the System Dynamics Review was taken over by Wiley, with George remaining on as the Editor. Because we had only volunteer support for Society activities, the agreement with Wiley included them managing our membership list. This lessened the burden on Julie sufficiently that she was able to continue supporting the Society on a volunteer basis, and provided the opportunity to get into the business of selling the Beer Game. Beginning in 1996 we transitioned the position of Executive Director from the volunteer efforts of Julie Pugh, to Roberta Spencer as an employee contracted through SUNY Albany. Roberta actually started half time, but as her activities and responsibilities increased she moved to full time and additional people began to work in the office.

The Central Office of the Society is engaged in three major activities, member support, product sales and conference. To pay for these activities we rely on membership income, sponsorship, product sales and conference revenue. The budget is designed so that sponsorship, product sales and conference revenue can be used to subsidize member support. The intention is to make membership in the Society as accessible and worthwhile as possible to the largest number of people. Though this subsidization is intentional, it is still a challenge to balance it so that unrealistic sponsorship demands are not created and conference fees do not get too high. Up until this year that challenge was getting more and more difficult and we were facing budget shortfalls that meant declining reserves.

This year we renegotiated the Wiley contract to take over the management of membership and change the way payments are made. The net result is that, without changing the membership fee, we will receive substantially more revenue with a significantly smaller increase in the administrative burden. We have decreased the extent to which member services require subsidization. This allows us to more easily balance the budget and move toward a well thought out and sustainable plan going forward.

There is still work to be done on this. We need to put more thought into balancing the subsidization to meet the needs of the Society. At the same time there is a necessity to manage the workload at the Central Office. We need to maintain quality without placing an undue burden on the staff. We also need to plan for the evolution of the Central Office staff and assure that everyone is compensated at a level that is appropriate given their assigned tasks, seniority and performance.

I have been focusing strongly on the Central Office, but the Society is broader than that and there are additional initiatives underway to strengthen the Society. Notable among them is a committee working toward increasing diversity, especially the number of women in the Society. The survey that came with the membership renewal forms was part of this activity. We are also working on making scholarships available. This will be done for conferences by waiving registration fees and when possible, providing some accommodation support (this will be done next year as part of the contract with the hotel). Free membership in the Society will also be made available to a limited number of people who would not otherwise be able to join with the goal of increasing geographic diversity.

So my overall assessment is that the Society is strong and growing. Its organization is good, and getting better. Society members share a strong set of core values including a desire to be inclusive, respect for the work of others and a love of system dynamics.

System Dynamics

With my perspective on the Society in place I would like to share my perspective on the field: what it is to me, how I connected to it, what success means, how we are doing and what we should do.

It has always fascinated me the amount of time we spend trying to decide what system dynamics is. It sometimes shows up as a conference topic, it is constantly being discussed and while there are always points of agreement

there are also disagreements. I know that some people get irritated by this; I have myself at times. But fundamentally I think it is a good thing. I don't think we need a clear universally accepted definition. The ongoing debate can help prevent us from being stifled by our own perceptions of what we do. I would, however, like to share the way I think about the field.

My introduction to system dynamics occurred in 1981. I had done an undergraduate degree in economics and wanted to continue with my PhD but was dissatisfied with what economics had to offer. A friend of mine had met Peter Senge at a World Futures conference and Peter talked about the National Model work being done at MIT. He sent me a short write-up and I became really intrigued. I decided to go to the Sloan School and focus on economics and system dynamics.

Arriving at MIT, I enrolled in a system dynamics course, then went to Jay Forrester and told him I wanted to work on the National Model project. Jay's immediate response was no! He told me I didn't have the background and to talk to him in a year or two. I protested, and told him I really wanted to do it, and he gave in. If Jay had stuck to his rule of always saying no two times, I am not sure what would have happened. But it all worked out and here I am.

I think about what I do as the "purposeful study of behavior." By purposeful I mean the application of the principles of science which have hypothesis creation and rejection at their heart. By behavior I mean looking at interactions and changes over time.

Nowhere in this nutshell of how I think about what I do did I mention feedback or simulation. For me these are simply the most powerful ways to understand behavior in a purposeful way, and that is why I love doing what I do. System dynamics is a means to an end, the best one available, but still a means.

Beyond simply the number of members in the Society how do we measure the success of system dynamics? There are a number of dimensions to this, though they can be summarized by quantity and quality. Quantity is simple the number of people working in the field, while quality includes the areas of application and the correctness of results.

As I have already said, we are growing as a Society. While the same is true of the number of practitioners, it is also true that we are a tiny number of people in the greater scheme of things. An important question related to the number of practitioners is whether we are a niche field. Is system dynamics something that everyone can and should learn, or is it something that will never be used by more than a tiny fraction of people? That is a question I often ask myself, and I don't really know the answer. Certainly it is hard work to do good system dynamics and it is not clear how many people are really capable. If we are a niche discipline then we need to focus on influencing others (good presentations). If we are not a niche discipline, than we should grow ourselves with tools for making it easier to do. Either way more education at all levels is likely to be helpful.

It is hard to find fault with the breadth and importance of application areas. There are lots of hard problems and it is possible to make some progress on almost all of them. Not all the hard problems are equally important, and we would do well to stick to the most important ones. Few of us, of course, have the luxury of picking any problem we want to work on. Funding sources, ease of publication, finding a suitable client and availability of information and other constraints tend to push us in certain directions. Work in public policy, organizational issues, resources, energy and the environment is always welcome, and there is a great deal of this work presented at our conference. Good work done in consulting engagements often does not get published or publicized and this is a loss to the field.

A simple definition of quality might be getting the answer right. We continue to make progress in techniques for finding the things wrong with our models and unraveling the insights they contain through behavioral, structural and statistical analysis. Understanding model boundaries, and interpreting and communicating results is key to providing problem-owners with solutions, and there continue to be developments in these areas. Some of this progress rests on corresponding developments in computer technology and some on our own ingenuity, but progress continues.

Getting people to do something about it seems to be a bigger challenge. While many claim to be open to being shown the error of their ways, few people actually are. Most, when confronted with counterintuitive results, are

more likely to dismiss the results than their intuition. Doing something about that requires being more persuasive, improving the ability of people to grasp the counterintuitive with education, or changing the rules by which we deal with the people making decisions. All of these are tough, and have potential pitfalls, and all are being pursued. Certainly as more people get actively involved in the practice of system dynamics the implementation challenge becomes less difficult.

State of the Field

In summary, there are many good things about where we are right now.

We have a growing base of practitioners, researchers and proponents in business, public policy, education and basic science. There are a wide variety of problem approaches as demonstrated at our conference and in our journal and we are accepting and open-minded about alternative approaches. We are developing education networks at all levels: primary, secondary, post secondary, graduate and professional. We have a number of subject area and geography specific communities forming within the larger system dynamics community.

Balancing this are some things that are not as good as they might be. We tend not to be sufficiently critical of our own work. We are still a small number of people relative to most academic disciplines. The educational opportunities in the field are not widely dispersed and there are often mismatches between interest and opportunity. There are not as many documented applications as there could be and follow-through is often weak.

So what should the system dynamics community do? In education distance learning, rigorous short courses (boot camps) and more widely available resources can all help to increase accessibility. Great things are happening here, with the WPI distance program and the MIT online course material being two good examples. The more applications that are written up and documented the more visibility and reference material we will have. The work we do outstrips the record we keep of it and we need to write more about applications. Software is fundamental to work in system dynamics and it is important that people who use the software know how to get more rigorous training in the field. Finally as a community we need to make ourselves easy to join, and give people reason to stay.

The Society helps in all of these things, and can help to do more. Community building is a major role of the Society and there are low effort ways through email mailing lists and web support to help with communication. Though the Society is not directly in the education business, we certainly help by making people aware of the opportunities and resources available. One of the key roles of the Society going forward will be to help with coordination and provide an intellectual meeting ground so that all people working in system dynamics can speed their progress.

Finally, what can you do? First and foremost do great work, both applications and theory. You should be proud to show your best stuff. If you are consulting then do what you need to protect sensitive information, but still bring your work forward. Demand rigor of yourself, your colleagues and your clients. Finally, be part of the community building. There are now a large number of Chapters and Special Interest Groups; join one and add to the conversation.

Bob Eberlein

Publication and Contact Information

The System Dynamics Society publishes the System Dynamics Newsletter four times a year.

Editors: Bob Eberlein, Roberta L. Spencer, Robin S. Langer, and Jennifer Rowe

Please send letters, news, photographs, and ideas for the newsletter to the Society office.

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From the Executive Director

"Owning" Our Membership – A Full Circle

Executive Director
Roberta L. Spencer

As you know, all Society membership activities are being taken over from Wiley by the Society's central office. This means that you will no longer receive membership correspondence from Wiley; instead, renewal notices and invoices will be sent directly from the Society's central office. Though this is a relatively big change for us now, it is not really something completely new. The history of managing our membership, our relation with Wiley, and even why the System Dynamics Review has a gray cover is an interesting one.

In the President's Address Bob Eberlein has mentioned that in 1985 Julie Pugh became the volunteer Executive Director of the new System Dynamics Society. In these very early days, our membership management was a home-based operation. Julie maintained the membership database started by Nathan Forrester on a Mac computer he donated. When the Mac grew too old to continue, Julie's husband, Jack, converted the database to the PC. In our archives we have all this early membership data on 8" floppy disks accompanied by pages and pages of yellowed-with-age continuous feed paper with dot matrix printing. Julie held this position for twelve years until she retired.

Bob has also told you about the launch of the *System Dynamics Review*. Just as today, a membership benefit was to receive a subscription to the *Review.* The members of the brand-new society expected a journal. The recently formed Publications Committee, and the VP Publications George Richardson, set out to produce the first, long-awaited issue. Eric Wolstenholme was the Editor of *Dynamica,* and its paper backlog was turned over to become the first issue of the *System Dynamics Review.* Eric became our first Executive Editor, to be followed by George in 1988.

In 1984 and well into 1985, George had been in the process of negotiating with three short-listed publishers: John Wiley & Sons (US based), Elsevier, and MIT Press. Initially, all three were interested, but in May 1985, they all chose not to publish our journal. Shortsightedly, they did not think we were a sufficiently viable growing discipline and not financially promising for them. The membership was anxiously anticipating delivery of the first issue of the journal, it was already May, and there was nothing! Without further delay, George contacted a small publishing firm called Editorial Inc.; they quickly helped locate a designer and copy editor. A printer in Albany was found. With the help of the copy editor the first double issue was produced and mailed by December 1985.

Why is the cover of the journal gray? Was it the knowing insight of the designer? Is there some special meaning? A piece of memorabilia I've learned sheds light on this. George surveyed the Publications Committee and others about what the journal should look like. Jay Forrester's reply: he didn't care what color it was so long as it looked like the paint on a Mercedes. With this visual cue, George found just the right shade of gray.

In a short four years, around 1989, John Wiley & Sons (based in England) became interested in and excited about the *System Dynamics Review.* They saw the *Review* as the premiere systems journal in the world and proposed an acquisition. As an added incentive, Wiley offered to manage our membership, lifting a growing burden from a volunteer operation. Volume 7, Number 1 (1991) was published by Wiley and they took over managing the membership/subscription list. Today, Wiley still publishes our journal. Bob reported last month that we now have a new contract with Wiley that will be effective through the end of 2010. This continues to be a strong and mutually beneficial relationship.

The central office's "owning" of membership activities begins with the renewal campaign for 2005. Last month we mailed each of our members a personalized renewal form. It was in the same envelope with *Newsletter #3* and the Boston Call for Papers, so I am hopeful the renewal form was not overlooked. This is clearly the first time we are doing this, but from the responses so far, everything seems to be working! If you have your renewal form, please complete it and send it to us with payment. A US check in dollars drawn on a US bank is the easiest

method for us to process. For many of you, of course, that is not practical. We can accept credit card payments either through mailing or faxing the renewal form. Wire transfers can also be arranged. Please call the office for details.

Additionally, Society members may now complete membership renewal and fee payment **online**. If you have not already renewed, please use the unique link sent to you in the email announcing this newsletter. An online form with a secure payment button is available. We are offering this new service for your convenience, hoping to make renewing easier. Please feel free to try this new service, or simply return the personalized renewal form sent to you last month by post. Also, a generic printable version of the membership form can be found on the Society webpage: http://www.systemdynamics.org/howtto_join.htm

One of our goals is to provide prompt, accurate and personalized membership services. By bringing home our membership renewals, we can continuously improve our service to you. Any questions you might have on membership status should be directed to the Society's central office. As always, please feel free to contact the office with any comments or recommendations. We strive to make it as easy and rewarding as possible to become and remain a member of the System Dynamics Society, and we are always interested in your ideas.

Roberta L. Spencer

Dana Meadows Student Award Endowment Fund Drive Announcement

Dana Meadows
Photo by Stuart Bratesman, Dartmouth College

Matching gift program doubles your contribution!

Here's a challenge we hope you can't resist. The System Dynamics Society announces a fundraising drive to permanently endow the Dana Meadows Student Award, given for the best work by students presented at the annual conference of the Society. Through the generosity of a diverse group of Dana's colleagues, former students, and supporters of the Society, your donation will be fully matched, doubling the value of your gift, until we reach the overall goal of $60,000. Help us permanently endow the Award and support the future of the field of system dynamics—the students.

Background: In 2001 the System Dynamics Society created a new award to recognize the best student work presented at the annual conference. The prize honors the late Dana Meadows, an inspiring and devoted teacher, by encouraging and recognizing the work of students, the future leaders of the field (below is a description of the Award).

The Meadows Award has been a great success. At the 2004 conference in Oxford there were 40 submissions, about 10% of all participants at the conference! The quality of the students' work has also increased dramatically. Even more important, the Award is catalyzing growing participation and interest in the field of system dynamics by students from all over the world. It is empowering the newest generation in our field to become more active in the Society and profession, a wonderful sign.

Up till now, Jane and Allen Boorstein have generously funded the Award. We are indebted to the Boorsteins for their strong and continuing support. However, Jane and Allen have urged the Society to put the Award on a more sustainable financial footing. In response, the Policy Council of the Society unanimously and enthusiastically voted to authorize the creation of the endowment fund and fund drive, and urges all supporters of the Society and field of system dynamics to give what they can. Our goal is $60,000. To help reach it, a group of Dana's colleagues, former students, and supporters of the Society have pledged to match your donations, until the overall goal of $60,000 is met. Through the generosity of these donors, every dollar you give will be doubled.

Now it's up to you, the members of the Society. Please contribute whatever you can to make this tribute to Dana sustainable. It would be wonderful to announce that we have met our goal at the 2005 conference, but the campaign remains open at least until we meet our goal.

All contributions are tax deductible (in the US). You can contribute by check, credit card, wire transfer, and online. Payment options can be found on the contributions form:
http://www.systemdynamics.org/newsletters/Oct04newsletters/HTMLPrintForm.htm
Information about the Award and how to contribute can be found on the System Dynamics Society website.

The FAQ below provides details relating to the Award, fund management, and contributions.

Many thanks!

John Sterman, Roberta Spencer, Michael Radzicki, Drew Jones, and John Morecroft

Frequently Asked Questions

How is my contribution matched?

A group of Dana's colleagues, former students, and other supporters of the System Dynamics Society have pledged to match all donations to the endowment fund, until we reach the overall goal of $60,000. Every dollar you give has double the impact.

Is my contribution tax deductible?

Yes. The System Dynamics Society is a non-profit educational institution. All contributions are tax deductible in the United States. Tax laws in other nations vary.

Who selects the Meadows Award winners and sets policy related to the Award?

The Award Committee, appointed by the Policy Council and now chaired by John Morecroft (London Business School), will continue to be responsible for the award competition, judging, selection of winners, and award related policy such as possible changes in eligibility criteria or judging procedures. Following the 2004 conference in Oxford the panel of judges was expanded to provide greater gender, regional and institutional diversity.

Who manages the endowment fund?

The ownership of the fund will be vested with the System Dynamics Society, a not-for-profit organization based in the United States. The Society office will manage the fund, with input from the VP Finance and our accountants. The fund will be invested with the goal of maximizing income while preserving principal.

How may the fund be used?

To the extent possible, the expenses associated with the Award will be paid out of the income generated by the endowment fund. To ensure the goal of the endowment and the Society that the fund remains viable in perpetuity, the principal will not be used to pay awards or other expenses. Earnings in excess of expenses will be reinvested in the endowment fund.

The income from the endowment fund may be used for the prize and travel stipend awarded to the winner(s), and for other direct expenses such as the cost of plaques or certificates given to the winner(s) and runners-up. However, fund income is not to be used to cover administrative or other expenses incurred by the Society, Award Committee or judges. Final authority with respect to issues relating to the administration of the fund rests with the Policy Council.

The purpose of the fund is to honor Dana Meadows by encouraging the participation of students in the field of system dynamics. In the event that the income from the fund grows to exceed what may reasonably be spent to do so, the Society may, with the approval of the Policy Council, Award Committee, and VP Finance, reallocate the income from the fund to other uses that benefit the Society and field of system dynamics. It is expected that such reallocation would occur only in unusual circumstances, and only after the income from the fund grows beyond

what may reasonably be required in the future to increase the Award, travel stipend, and endowment principal to keep pace with inflation and other changes in circumstances.

Yes! I want to double my impact!* How can I contribute?

You can contribute by check, wire transfer, credit card, or online. Make your check (in US Dollars drawn on a US bank) payable to "System Dynamics Society" and send it to Roberta Spencer, System Dynamics Society, Milne Hall 300, Rockefeller College, 135 Western Avenue, University at Albany, Albany, NY 12222 USA. Payment options can be found on the contributions form:
http://www.systemdynamics.org/newsletters/Oct04newsletters/HTMLPrintForm.htm
Information about the Award and how to contribute can be found on the System Dynamics Society website.
Questions? Email Roberta Spencer at system.dynamics@albany.edu

On behalf of the Society, we thank you in advance for your generous contribution!

* The first $30,000 in contributions will be fully matched, doubling the value of your gift.

DANA MEADOWS STUDENT AWARD

(From the call for nominations prepared by John Morecroft, chair of the Awards committee)

The Dana Meadows Student Award symbolizes the System Dynamics Society's commitment to students in two ways. It brings recognition to the very best student work. It also honors, in an enduring way, the life and work of Dana Meadows. For the purpose of the award, a student is anyone enrolled in an accredited program of study, in any subject. The winner receives a certificate, a cash award of $500, and up to $700 toward registration and travel for the conference at which the paper is presented. In addition three papers are selected for honourable mention and the authors receive a certificate. Students are strongly encouraged to attend the conference and present their work. However, under exceptional circumstances the winner or runners-up may be recognised without attendance. A winner who is unable to attend will still receive the cash award but will not receive travel or registration expenses.

Dana Meadows is remembered as an eloquent sustainability advocate and environmental writer. But she was also, and arguably foremost, a teacher -- one exceptionally committed to her students and their development not only intellectually but in all ways. Honoring Dana through this award recognizes her work as an inspiring teacher and mentor of young people, and sets a standard for what good modeling is. The award will help develop the next generation of systems thinkers and modelers according to her ideals. Her unusually high level of integrity in all things extended to high standards for modeling, for documentation, and for exposing assumptions. The words of two of her (now distinguished) former students embody the spirit and intention of the prize:

"On occasions when I might be tempted to cut corners in modeling work (what modeler hasn't faced these), envisioning Dana across the table, posing her gentle but piercing queries, was one of the things that helped keep me honest."

"Dana knew better than most of us that the leverage points for changing a system often lie far from the symptoms of difficulty. She would understand that an application of system dynamics to issues apparently not connected to sustainability might very well promote her goals, not only her goals of creating a sustainable and just society but of promoting integrity and honesty in our analysis of problems, whatever and wherever they may be."

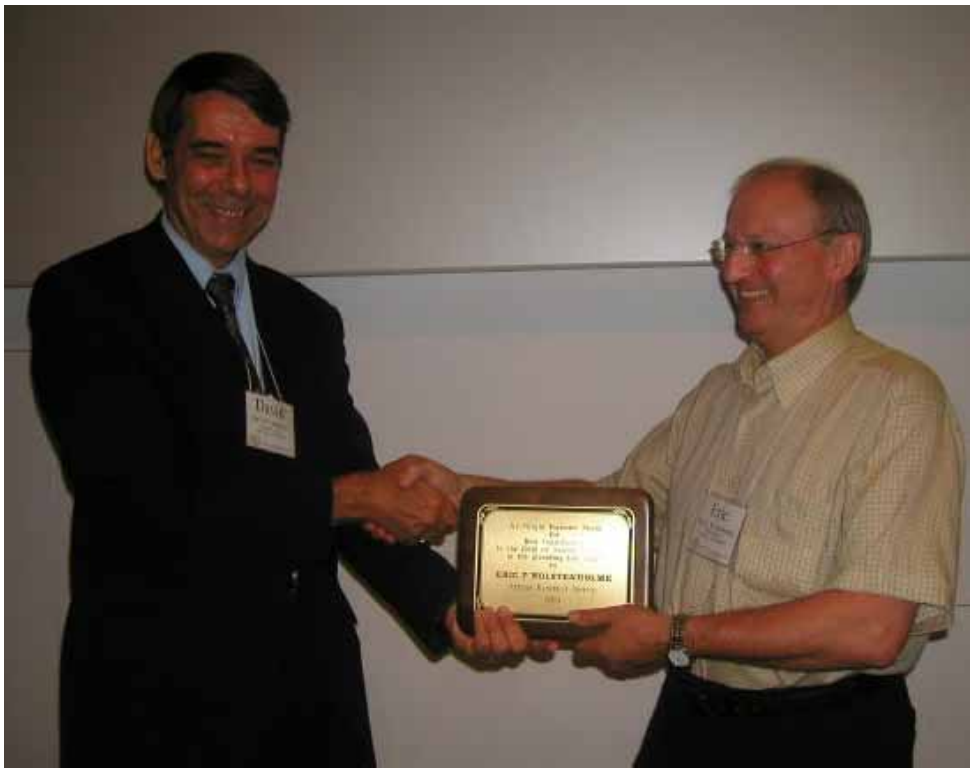
For more information, including a list of the past winners, please visit:
http://www.systemdynamics.org/conf2004/DHMaward.htm

Member News

Eric F. Wolstenholme Wins Forrester Award

The Jay Wright Forrester Award recognizes the author of the best contribution to the field of system dynamics in the preceding five years. The winner in 2004 was Eric F. Wolstenholme for his paper "Towards the Definition and Use of a Core Set of Archetypal Structures in System Dynamics," published in the *System Dynamics Review* 19 (1) Spring 2003. The citation and the winner's speech (delivered at the Award Ceremony in Oxford, England)

will be published in full in the *System Dynamics Review*. The recipient receives a commemorative plaque and US$5,000.



David F. Andersen, Member of the Awards Committee, and Award Winner Eric F. Wolstenholme

Below is a short excerpt from the citation.

One nominator noted that, "This paper added to our literature in several significant ways:

- It showed that archetypes had a role in both conceptualizing and communicating system dynamics models.
- It showed that system archetypes can be reduced to a core set of four totally generic archetypes, consisting of the four ways of ordering a pair of reinforcing and balancing feed back loops. Thus all existing archetypes are in fact semi-generic and can be mapped onto the four generic types.
- It separated for the first time 'problem' and solutions archetypes. Previous drawings of archetypes had confused problem and solution links."

Wolstenholme is deeply grounded in client-centered system dynamics. His grounding in system dynamics dates back to 1976… He was a founding member of the System Dynamics Society and the founding editor of the *System Dynamics Review*. In 1989 he was the President of the International System Dynamics Society and in 2001 was the President of the UK Chapter of the Society.

David Andersen

Dana Meadows Student Prize Awarded in Oxford

This year's winner of the Dana Meadows Prize for the best student paper presented at the annual conference was **Hazhir Rahmandad,** MIT Sloan School of Management, Massachusetts, USA. Hazhir's paper was entitled "Heterogeneity and Network Structure in the Dynamics of Contagion: Comparing Agent-Based and Differential Equation Models." The awards committee called Hazhir's paper "An excellent methodological paper on a timely topic, comparing system dynamics and agent-based models…Classic contagion models are well understood in

both the system dynamics and agent-based literature. Bridging this literature, Hazhir constructs parallel models to shed light on the implicit aggregation assumptions in system dynamics, the elegant parsimony of differential equation models, the inner workings of agent-based simulators, the conditions under which agent-based models converge exactly with differential equation models, the conditions that lead to significant differences in simulated behaviour, and the potential policy implications of such differences. Because of the care taken in setting up comparable models, the world of agent-based modelling is made much more accessible to the system dynamics community and vice-versa."

Honorable mentions, all equally ranked, went to (in alphabetical order):

Necdet Serhat Aybat, Sinem Daysal, Burcu Tan and **Fulden Topaloğlu**, Boğaziçi University, Istanbul, Turkey, for "Decision Making Tests with Different Variations of The Stock Management Game."

Gökhan Dogan, MIT, Massachusetts, USA for "Confidence Interval Estimation in System Dynamics Models: Bootstrapping vs. Likelihood Ratio Method."

Jeroen Struben, MIT, Massachusetts, USA, for "Technology Transitions: Identifying Challenges for Hydrogen Vehicles."

Award Sponsor Allen Boorstein, Dana Meadows Student Prize Committee Chair John Morecroft, Sinem Daysal, Necdet Serhat Aybat, Gökhan Dogan, and Jeroen Struben (Hazhir Rahmandad is missing from the photograph.)

Building on the success of the award the Society has launched a campaign to permanently endow the Meadows Prize. Through the generous pledges of a group of Dana's former students, colleagues, and other supporters of the Society, your gift to the endowment fund will be fully matched! To see how you can double the impact of your gift, go back to the Dana Meadows Student Award Endowment Fund Drive Announcement earlier in the newsletter.

New PhD's

It is our pleasure to announce members of the Society who have recently received their PhD's.

Kevin Seel "Boom and Bust" Cycles in Power Plant Construction: A Simulation Study of the Temporal and Geographical Aspects of the Alberta Competitive Electrical Industry. Department of Geography, University of Calgary, 2004.

Lazaros V. Petrides "Economics, Critical Realism and System Dynamics," University of Salford, July 2004.


David L. Cooke

David L. Cooke successfully defended his PhD thesis "The Dynamics and Control of Operational Risks" on April 16, 2004. Andy Ford was the external examiner on the committee at the Haskayne School of Business,University of Calgary. Additionally the Alberta Heritage Foundation for Medical Research (AHFMR) and the Health Quality Council of Alberta (HQCA) are pleased to announce the first HQCA Fellowship in Patient Safety has been awarded to **Dr. David L. Cooke** in the Department of Community Health Sciences, Faculty of Medicine, University of Calgary. The purpose of the new, one-year fellowship, which is supported by HQCA and administered by AHFMR, is to examine issues around patient safety throughout Alberta's health system—from regional community health to health services in urban centres. The Council is interested in research that will lead to improved methods of patient safety and can be rapidly implemented into healthcare. Dr. Cooke's research is focused on safety system dynamics. He will work with colleagues at the Tom Baker Cancer Centre in Calgary to examine data and systems involved in radiation treatment delivery.

Paulo Gonçalves Receives Dissertation Award

Paulo Gonçalves has received the 2004 Doctoral Dissertation Award by the Council of Logistics Management (CLM) for his dissertation, "Demand Bubbles and Phantom Orders in Supply Chains." In his thesis Paulo develops system dynamics models of demand bubbles in supply chains, with case studies in the semiconductor, telecom and hybrid seed industries. CLM provides an award for a doctoral dissertation in logistics or a related field that demonstrates significant originality and technical competence while contributing to the logistics knowledge base. The purpose of the award is to encourage research leading to advancement of the theory and practice of logistics management. Paulo received his PhD in system dynamics at the MIT Sloan School. His dissertation committee consisted of Gabriel Bitran, Charlie Fine, Jim Hines, Jim Rice, and John Sterman.

Paulo is now a faculty member at the University of Miami (Paulo Gonçalves paulog@miami.edu). Congratulations to Paulo for a job well done!

Brian Dangerfield Gave His Inaugural Lecture

Late last year Brian Dangerfield gave his Inaugural Lecture. This is a public lecture and is a custom in the UK in many universities following promotion of the individual to full professor. Brian was promoted in August 2000 and the delivery lag of 3 years is not untypical!

An Inaugural Lecture is designed to appeal to a lay audience as well as informed specialists. With three mayors and their wives on the front row, not to mention Brian's three daughters, one stepdaughter and all their boyfriends it was as well that this maxim was adhered to!

The lecture title was "The Pursuit of Understanding: modelling dynamic behaviour in disease, life and love". Brian firstly reviewed the basics of system dynamics including stock-flow diagrams, delays and the ways in which interaction effects generate adaptive feedback in a system so making it difficult to fully understand its behaviour without the aid of a model.

He then recounted various examples of applications of the structure of coupled positive and negative loops which has coincidentally been the structure underpinning a number of models developed in his research. Thus the HIV-AIDS epidemic model was described charting its progress from a student project model of 13 equations in 1987 to a fairly complex model of some 360 equations when used to examine health resource implications and the effects of HAART in 2001.

"Life" was given coverage by reference to a simple model of a short-term fashion item, the diffusion of innovations, the prospects for sustainable tourism in island tourist economies, the rise and fall of superclubs (house music dance clubs) in the UK and Brian's current research on modelling the management of economic growth in Sarawak, E. Malaysia.

Finally, his treatment of "love" explored the dynamics of male-female relationships. He identified four reference modes: two were sustainable futures "Golden Wedding" and "Ami et Odi" (Love and Hate) and two were endgames "We're still good friends" and "Mutual Loathing". By reference to various UK and European statistics on marriage, divorce and co-habitation, Brian speculated on the likely frequencies of "sustainable futures" and "endgames".

Around 65 people attended the lecture which was followed by a presentation to Brian of a small glass pyramid rather like a prism (had he hit a peak?!), inscribed with the university's logo and, to round off, a delicious buffet.

Brian Dangerfield

Oxford Conference Report

Photos from the Oxford Conference are posted on the Society website at http://www.systemdynamics.org/conf2004/pictures/index.html–please take a look.

You will find below articles written by volunteer conference session reporters. While not all sessions are covered, we hope these give a feel for the conference. There was an interesting mixture of work presented at the conference. Public Policy, including threads in issues such as health policy and security, accounted for almost one quarter of all the conference presentations. Other threads with sizeable numbers of presentations were Business Applications and Methodology, both including a range of issues and topics. Extra copies of the proceedings are available through the Society office.

From the 2004 Conference Organizing Team, thanks!

PhD Colloquium (Sunday)

The International PhD Colloquium is an event of the System Dynamics Student Chapter. It has been organized by PhD students and held on the Sunday before the conference week every year for the last five years. Its objective is to bring together PhD students who are involved in System Dynamics research and to give them the opportunity to raise key questions and/or concerns related to their research and discuss these in depth in a constructive and enjoyable atmosphere.

This year, the 5th International PhD Colloquium was organized by Burak Güneralp from the University of Illinois at Urbana-Champaign. The all-day colloquium was held, as usual, on Sunday, July 25. It started at 9 in the morning and ended at about 6:30 in the evening.

This year's colloquium has been the most versatile ever! First, there was a panel session in the morning, followed by three oral presentation sessions in the afternoon; and the final event of the day was a poster session. Conveniently scheduled coffee-breaks gave the participants a chance to refresh themselves once in a while. The meal, at lunchtime, was also superb…

The colloquium opened with a panel on "the Career Options for Life after PhD". The panel was organized by Birgit Kopainsky of Swiss Federal Institute of Technology. The panelists were two academicians and one consultant: Etiënne Rouwette from the Nijmegen University, Oleg Pavlov from the WIP, and Dennis Sherwood from the Silver Bullet Machine Manufacturing Company. In the accompanying lively discussion environment, they shared with us their experiences and their views on both academic and non-academic career issues.

Three oral presentation sessions followed the panel in the afternoon. At each session, there were two back-to-back 20-minute presentations followed by two parallel 35-minute workshops, one for each presenter. During the workshops, the presenters were able to discuss issues related to their research topics in more detail with the interested participants and get feedback from them.

Finally, there was a one-hour poster session scheduled in order to give all the students who have submitted a proposal the chance to present their work. There were five posters in this session. Though scheduled to last one hour the poster session actually lasted two hours as a result of the continuing rigorous interaction between the participants.

The participation level was quite satisfactory. At times, we had some 50 people in the room. The participants, with diverse backgrounds, were from both academic and non-academic institutions.

As always, the diversity and the interactive setting of the PhD colloquium provided a unique learning opportunity for all participants. The students closely interacted with the established faculty and others of the wider system dynamics community. I believe the participants had received valuable feedback from each other and both enjoyed and benefited from the event.

Thanks to all who participated and turned the colloquium into an enjoyable and beneficial experience!

Burak Güneralp

Bringing Coherence & Consensus to Public Policy Making – Plenary Session (Monday 9:00 AM)

"Bringing Coherence & Consensus to Public Policy Making" by Nick Mabey, Geoff Mulgan, Catriona Laing

"Using SD to Influence & Interpret Health & Social Care Policy in the UK" By Eric Wolstenholme, David Monk, Gill Smith, Douglas McKelvie

The plenary session, "Bringing Coherence and Consensus to Public Policy Making" was the first of the conference and was chaired by global business journalist Peter Day. Mr. Day noted it was his professional duty as a journalist to oversimplify problems and assume trends will continue forever, it being understood that the conference generally and session specifically would address such problems with more attention given to their structural and dynamic complexity.

The first talk was by Nick Mabey of the UK Government's strategy unit. In Mabey's view, governments are comprised of *silos* – separate departments and knowledge areas – and it is his challenge to try and lend understanding to topics that span these silos. Senior government decision makers require Barry Richmond's

10,000 ft. perspective, which is tough to achieve because government experts and analysts are so highly detail oriented. Once that perspective is achieved though, it remains problematic because it is difficult to convince people with broad and overarching studies. Mabey also notes that modeling government problems and processes is not limited by data but by time. In modern governments there is plenty of data, often too much, but having the time and opportunity to sort, synthesize, and understand it all remains too rare. Another limitation is the inherently unstructured nature of government problems that hinders an analyst's ability to build highly accurate and useful models. In Mabey's view, SD concerns the known and knowable, but government often concerns the complex and chaotic. Thus the fundamental decision quest is that of muddling through, of delivering services and reacting to crises rather than structuring problems and formulating strategy.

Mabey discussed four issue areas on which he had worked: 1) fisheries policy, 2) correctional services, 3) energy policy, and 4) failing states. First, the fisheries model tied together a great many variables in a way other analytic methodologies cannot including politics, boats, fish stocks, honesty of reporting, supply and demand, profits, and investment. Such multivariate studies tend, by their very nature, to be thin and general, yet it is mastery of detail on which government experts thrive. Thus model acceptance, as usual, was an issue. The goal for the fisheries model was thus to develop an adaptive rather than a command and control model. Second, the correctional services model tried to answer fundamental questions like "Why are people being sentenced?" and "Are their more cost effective interventions?" Perhaps the most fundamental insight was noticing that there exists no feedback between the courts and the prison system, so the two institutions work at cross purposes – the courts being rewarded for filling the prisons and the prison system being criticized for not being able to keep up. Third, the energy policy model sought to provide energy security by 2050. It did this by investigating low-carbon pathways and supporting investments. Mabey sought to balance certainty with flexibility, but there was no simple and compelling way to communicate the model's insights, especially to non-quantitative politicians. Fourth, failing states were studied, including the issues of security, economics prosperity, organized crime, and humanitarianism. Mabey pointed out that there is both more structure and more chaos in these issues than you think. The goal was to combine systems modeling with experts and expertise, but such modeling efforts are hampered by lack of demand from senior decision makers. Thus systems insights must be communicated in a way that can be understood. It is easy to make things complicated, but making them simple is hard. To be successful, effects must be demonstrated, and customers must be educated.

In conclusion, Mabey observed that modelers should not overestimate their potential contributions to political problems. In order to implement initiatives or pursue policies, politicians must assemble coalitions. This is hard to do, and the number and type of coalitions a politician can assemble is limited by the political capital available. Thus it is not enough to deliver quality analysis – political factors must be considered, and implementation is both important and hard work.

The talk by Eric Wolstenholme concerned his experience with health and social care in the UK. In discussing this work, it is important to understand the magnitude of the issue – ten health communities each with budgets of about £100 million. The engagement was motivated by several goals: modernizing health and social care in UK, preserving the best health system in the world, and giving patients choice. Currently people recognize that the system is in trouble, but there is no consensus concerning what to do about it. The system is dominated by silos – local governments, hospitals, primary car organizations, and social services – and each has conflicting performance measures and targets. Initiative overload and continuous reorganization of the silos contributes to thwart progress. In other words, the system is out of balance.

The goal then is to get the system back into balance, to understand these conflicting system components within an overarching analytic framework, what Wolstenholme calls a "whole system commissioning template." The health system is a political system, and politicians play to power, which in this system resides in the hospitals. Local governments provide services mandated by Parliament, and the local governments also lobby parliament. Because local government services are overextended, hospitals delay discharges, which causes overcrowded hospital. Hospitals in turn use these backups to justify more funding. Wolstenholme points out that this is akin to having a clogged sink and requesting a bigger sink rather than unclogging the drain. Thus what is really required is restoration of the flow: early rather than delayed discharge enabled by moving resources to the local governments so that social services can handle the cases. Currently it is difficult to make this argument because the system is in a constant state of emergency, which blocks both useful information and the non-emergency

cases, causing further backups and delays. Rebalancing resources, targeting investments, and concentrating on flows rather than stocks from an overarching perspective is the path towards systems improvement.

Corey Lofdahl

Bringing Coherence And Consensus To Public Policy Making - Papers & Debate

The session was divided in two parts. In the first part two papers were presented. In the second part a debate took place.

First, Vince Barabba and Mark Paich presented the paper "Impact of Context in Selecting Decision Tools for use in Both the Public and Private Sectors. They explained how an important and first step to build consensus in public policy making is to ensure there is coherence in how decision makers view the context surrounding the decision to be made. Three prototypical designs were described: make-and-sell, sense-and-respond, and anticipate-and-lead. These approaches result from the combination of two axis: complexity and uncertainty. The impact of the context in mind on decisions tool choice was demonstrated making use of an example related to the acculturation of the Hispanic population in the United States.

After, Richard Dudley presented the paper "The Dynamic Structure of Social Capital: How Interpersonal Connections Create Communitywide Benefits". He explained how, while benefits of social capital are well documented, the mechanisms of social capital- how it produces such benefits- are less well understood. To gain understanding on these mechanisms, he developed system dynamic models for three of the mechanisms suggested: (1) Useful information, (2) Trust which facilitate cooperative actions and (3) Standardized behavior, "norms", which create a predictable environment. He explained how one can more clearly define social capital by using the structure of these models. Moreover, from these insights he gave an important recommendation to policy makers trying to enhance social capital in communities. This advice is to make use of the existing social networks (and not to create new ones) for delivering the benefits of their policies. In this way they improve the "perceived value of social connections" and the benefit of existing networks, which increase the social capital of the region.

For the debate, the second part of the session, other members that took part besides the presenters were: Nick Mabey, Eric Woslenholme, Gill Smith, David Monk and Douglas McKelvie; all presenters of the Monday morning opening plenary session.

The debate centered in the obstacles of enhancing the position of System Dynamics as a scientific discipline, and of moving from "insights" to get things done and how to overcome these obstacles. Moreover, special attention was paid to the creation and operation of two strategic and multidisciplinary units in the public -Prime Minister Advise Unit- and the private -GM strategic unit- sectors making use of System Dynamics in order to give advice to policy makers.

Some of the obstacles for enhancing the position of System Dynamics as a discipline discussed were: (a) the misperception that SD is so simple that you do not need to learn it, (b) the fact that quantitative models could cause disinterest from social scientists and (c) the difficulty to convince people in the field that is useful to step back and analyze what happened. Moreover, there was a discussion whether models should or should not be presented to the clients.

Referring to the difficulty of implementing systemic solutions, two important reasons were mentioned: (1) there is a time delay between the right answer being available and being politically acceptable and (2) politics stays in the range of people expectations, because votes are the politicians clear feedback loops.

Some of the solutions mentioned to solve the major disconnect between rhetoric and implementation were: (1) design the policy in a way it could happen by complementing the insight from models with the design of coalitions around the solution and the value of change, side effects and cost-benefits analyses, (2) communicate properly the advise, E.g. using dissemination models, using modern graphical techniques, making people more aware about the assumptions, using games and others.

Monica Altamirano

Interactive Poster Session: Business (Monday 10:00 AM)

More than 40 participants attended the Business poster session. The business poster session consisted of five presentations, characterized by a various range of industrial application oriented approaches. J Bradley Morrison introduced a poster presentation "Dynamics of learning by doing under constraints: analysis of the tipping point", which is focusing on identifying dynamic behaviour and structure of a learning process. Carlos Capel and Joao Dias (Scenario Planning And Evaluation Of Pricing Strategies In The Portuguese Bulk LPG Market) introduced a system dynamics model to evaluate some pricing strategies under different scenarios of LPG (Liquefied Petroleum Gas) international cost.

Heinz Schild introduced a case study which is discussing how to deal with the free-flow motorway toll system issues, which was starting with a "stock and flow" diagram and then proceeding to implement them as an agent based simulation. The author argued that to do this a graphical backcloth must first be designed which models the relationships between the dynamic and static agents in a topologically correct way. Based on a behaviour space generated by simulating key combinations of the design parameters, recommendations for a satisfactory enforcement schema are possible. Thereafter, Pseudo-empirical data produced by the agent-based simulation could be used to calibrate aggregated behaviour equations suitable for modelling with System Dynamics software tools.

Yalin Gunduz and Alper Alsan introduced a poster presentation "System Dynamics Approach to Modelling Business-to-Business Markets: The Case of Siemens." This study focuses on estimating the size of the electrical and electronic market, i.e. electro-market of Siemens Turkey using system dynamics modelling. The backbone of the model resides in the dynamic relationship between served, unserved and inaccessible segments of each electro-market. Nine models have been constructed for groups that operate in energy, elecommunications, medicals, transportation, and automation industries. Each model is converted to a management flight simulator giving each operating group manager the chance to simulate the results of their governance of the group's electromarket. The final deliverable is a consolidated management flight simulator, which will be a support tool for exercising different market approaches and strategic options for corporate management.

Andrea Bassi's presentation "Strategic Analysis Evolution: Scenario Planning And Simulation Based On The Methodology Of System Dynamics" is aimed at developing the optimal instruments for dispelling the uncertainty factors during the formulation of strategies for corporate development. The objective is the creation of a complete model of strategic analysis, which encompasses both the environment (internal and external) and the management rational component. This model – built on the analysis of three business cases - is concretized by a simulation for testing the strategy by the means of software which enables the users to cope with a dynamic and complex corporate environment.

Yan Xing

Methodology: Group Model Building Parallel Session (Monday 11:30 AM)

In this session three papers were presented:

A system dynamics choice structure for policy compliance: micro behavior explaining aggregated recycling dynamics (by Sylvia Ulli-Beer, George Richardson and David Andersen), Developing an interpretive dialogue for group model building (by Aldo Zagonel), and Stirling revisited: practical approaches to merging two systems thinking streams (by Fran Ackermann, Susan Howick and David Andersen)

The first presentation by **Sylvia Ulli-Beer** focused on recycling behavior at the local level. A system dynamics model is developed that describes the interaction between personal preferences and people's surroundings. Part of the surroundings are the recycling initiatives launched by (local) governments. The model is used in policy experiments in order to determine which recycling initiatives will be most successful. In the future the model might be used to develop a formal compliance framework. In the discussion following the presentation attendants asked about the household decision making structure and the micro level assumptions in the model. The household decision making structure shows how a belief on recycling behavior that is shared by people in the community, influences individual beliefs. At the micro level, the model includes for example the collection of different types of waste at different days in the week.

The second presentation addressed the tension between two important roles of models: microworlds or boundary objects. An example of the first role would be the idea to 'speak truth to power', while in the second role the benefits of the process of modeling is emphasized. **Aldo Zagonel** used the Competing Values approach to identify the different uses a model is put to and to illustrate results graphically. This shows for example that in issue elicitation the focus is mainly on the process and in the conceptualization phase more on rationality. One of the benefits of evaluating the different stages of modeling in this way is that the process becomes more transparent and student facilitators can be equipped better to deal with difficult situations (for example a switch between roles).

The last presentation in this session showed how two approaches to modeling can be integrated. **David Andersen** presented both a practical case in which group model building and cognitive mapping were used as well as theoretical considerations about the integration of these methods. In the idea elicitation phase of the project, group decision explorer was used to electronically gather and relate ideas. A set of coding rules was then developed to translate these maps into causal loop diagrams. An important conclusion of the combination of these methods is that decision explorer works very fast in eliciting ideas but also that some help from a facilitator in filling out maps is still needed, as people do not always define variables in a correct way.

Etiënne Rouwette

Business Applications - Industry Models Parallel Session (Monday 2:30 PM)

This session chaired by Nikko Georgantzas was ranged among the industry models of the business applications. The first two presentations were related to the automobile market but it was analysed in very different perspectives, indeed the first model was built for the big and well-known American manufacturer GM and the second one for the Chinese government. The General Motors Enterprise Model concerns the North American Market; and an interesting overview of this large and detailed model was given from its high level structure to some of its key pieces such as the *consumer choice* that appeared to be one of the most complex sections. The second one was the Chinese Private Vehicle Demand Model developed for the Chinese government to help it adopt policies. This industry is considered in China as one of the leading industries, it is characterised by an amazing growing demand but also by recent and profound structural changes. In the same time the government has to face an increasing congestion, air pollution and oil import dependence; several policy alternatives were thus tested to evaluate their effects on these three issues.

The following presentation dealt with the third generation of mobiles in Egypt to be launched by 2005. This research is carried out by Vodafone Egypt – one of the two existing operators - and the Faculty of Engineering of Cairo University. The major question of research is to evaluate the impacts of this new technology on profitability as the current operators need to increase their revenues in a context of an economic crisis. But it was shown that even if there is a real market for these new services the expected revenues seem to be quite low.

The last presentation was an original contribution to SD directly linked to the theme of the Oxford conference as it concerned *collegiality* in civil litigation. This work focused on pre-trial phase considered as time consuming, and is placed in a context of a win-win climate vs. the most common attitude characterised by 'I win you loose'. Different types of games were presented, one of the results is that a full collaboration between two contestants maximise payoffs and thus encourages the process of *collaborative law* (attorneys work alongside contestants who concurred in finding an agreement without going to court). So according to the authors collaborative law could be seen as the future of civil litigation and used in business. This session showed again the diversity and richness of works in the SD field.

Valerie Gacogne

Parallel Session: Methodology – Loop Dominance and Testing (Monday 2:30 PM)

This session had three great talks on model estimation, simplification, and the relationship between the polarity of feedback loops and system behavior. Burak Guneralp examined a system of three loops and two stocks to investigate the relationship between loop polarity and system behavior. He reported how the relative magnitude and location of loops moderate the relationship between loop polarity and system behavior leading to the conclusion that loop polarity alone could be a poor guide to understanding how loops affect system behavior. Ali Saysel presented his work with Yaman Barlas showing a set of steps for simplifying a model so that the model

becomes easier to explain and generalize. In his example, a model was reduced from sixty-two stock variables and thirteen sectors to only eleven stock variables and five sectors without radically changing its behavior. A rich discussion followed about the uniqueness of any possible simplification and the potential for developing a broader taxonomy of simplification steps. Gokhan Dogan concluded the session with a discussion of parameter estimation methods. He noted that most SD models violated key assumptions of the commonly used likelihood ratio (LR) method of estimation leading to overly narrow confidence intervals. He compared output from LR and bootstrapping methods (which do not make the same assumptions), showed that bootstrapping consistently produced more conservative estimates of confidence intervals, and argued that bootstrapping models should be incorporated into available software and chosen over LR methods. Bob Eberlein and others expressed support for the change in methods, but unfortunately I believe Bob was joking when he promised to update Vensim™ before dinner.

Scott Rockart

Special Plenary Session (Tuesday 8:30 AM)
Working Ideas, Insights for Systems Modeling: The broader community of system thinkers by Peter Checkland, Mike Pidd & John Morecroft

Tuesday morning's plenary session proved among the conference's most exciting, generating far more discussion than time allowed and continued interest throughout the conference.

Each of the three presenters sought to delineate between "hard" and "soft" modeling approaches and perspectives across both System Dynamics and Operations Research applications. On balance, the panel participants argued in favor for greater inclusion of "soft" approaches when addressing system challenges. In three different ways each panelist asserted that the systems human participants are the system, not simply exogenous observers and that traditional approaches focused on representing a system principally on stock and flow structures are inherently incomplete. Key points by panelist (in order of presentation);

Mike Pidd - Presented a continuum between highly routine "puzzles" with definite answers to highly unique or "wicked" challenges lacking known answers, structures or universal understanding. This continuum was the basis for much of his subsequent argument to include soft variables.

John Morecroft - Presented prior work done at the BBC as well as key points to support his position regarding soft variables in SD modeling as follows; 1) two people can have very different views of the same system, 2) rigorous methods do exist to capture soft variables in SD models, 3) a CLD is not necessarily a soft model and 4) simulation is a tool to simulate imagination, dialogue and learning and therefore inherently has a "soft" side.

Peter Checkland - Characterized "hard" versus "soft" modeling approaches based on an Operations Research perspective to include; when the approach was first introduced, classic applications, philosophy of application and social implications.

For additional detail, please see the 2004 Conference Proceedings for the Panellist's accompanying paper.

Ken Parsons

Parallel session: Health – Patient Flows (Tuesday 11:30 AM)

Health is one of the hot topics in the application of System Dynamics. This is quite evident in view of the numerous parallel sessions on several aspects of health (3 sessions in which 10 papers were presented), some poster sessions and a workshop. This is not surprising, because health is a public concern, the public is experiencing the negative effects of waiting lists and waiting times and governments are confronted with excessive expenses in the public health systems.

The logistics of patient flows is one of the important issues in the functioning of health organizations. OLM Consulting (Gill Smith and Douglas McKenzie) presented two out of three papers in this parallel session concerning mental health and health and social care commissioning. Both of the presenters showed results from a modeling project in which they used a system dynamics model in the dialogue with the client and built a simulation model to evaluate policies. This gave a good overview of how a system dynamics model can be used

to communicate in health organizations. Models help to gain insight in the system of the logistics in health systems and are of great support in policy making. Good policies are welcome, because they are much needed!

In addition to the presentations of OLM Consulting, Steffen Bayer from Tanaka Business School in London presented a study including a model focused on care innovation: Telecare. Telecare should relieve the pressure on the current (traditional) system of social care. The impact on costs, disease progression and the hospital population were some of the most important aspects of this study.

On the one hand the collection of papers in this parallel session shows policy evaluation within the system and on the other hand the policies outside the current system that affect the system. The conclusion of this session is that some great examples of system dynamics applications in the field of health and social care were presented.

Wouter Jongebreur

Parallel Session: Organizational Dynamics – Learning (Tuesday 11:30 AM)

The speakers in this session discussed learning within groups, learning among interacting organizations, and learning by policy makers and the public. Elaine Lizeo opened by asking why groups learn at different rates. She reported on three case studies and presented causal diagrams and an initial stock-and-flow model developed to help understand how the environment, interpersonal risk levels, power relationships, leadership styles and other group characteristics influence interaction and learning within a group. Annick Castiaux presented a modified Lotka Volterra model to explore patterns of knowledge building when organizations compete, collaborate, or prey on one another. Her model added interactions within the populations to mimic learning within the organizations. Rod MacDonald presented work by Ignacio Martinez and Gerald Marschke that examined the evolution of rules in organizations. The paper focused on how rules designed to fix problems give rise to new problems whose solutions give rise to further problems. The study was based on the thirty-year history of national workforce performance programs in the United States.

Scott Rockart

Methodology Alternative Approaches - SD and Agent Based Modelling (Tuesday 2:30 PM)

The parallel session on "Methodology: Alternative Approaches – SD and Agent Based Modelling" was held Tuesday, July 27, 2004, 2.30 pm. Not really typical, the session started with a presentation by the chairman, Andrei Borshchev. Supported by a number of exemplary models, he compared agent-based modelling, system dynamics and discrete event simulation with the goal to find areas of application for each modelling paradigm. Andrei argues for the use of agent-based modelling to add more detail to existing aggregate models and by that to capture more real-world behaviour. The following talk by Nadine Schieritz assessed arguments of the agent-based modelling community for the superiority of this simulation paradigm. Nadine uses a simple population model to analyse the effect of heterogeneity on the dynamics of a system. She finds that dynamics caused by heterogeneity do not necessarily require a deep level of disaggregation to occur. Nathaniel Osgood continued with a detailed analysis of how computational resource demands and approximation errors scale with growing heterogeneity. He compares the areas of application of attribute-based and agent-based modelling. The presenter of the last paper, Hazhir Rahmandad, could not attend the conference for US security reasons. John Sterman as his supervisor gave the talk instead of him. Hazhir uses the spread of contagious diseases as an example to compare results of agent-based and system dynamics modeling. He analyses the effect that heterogeneity and different network structures have on the differences between agent-based and system dynamics results. Hazhir also won the Dana Meadows Students Paper Award for the paper on which the presentation was based.

Altogether it was an interesting and entertaining session that again proved that you should not rely too much on technical support when making a presentation and that 15 minutes are not enough time for presenting (even if your computer does not break down). The very cozy atmosphere of the session was supported by the fact that around 50 people sitting in a room made for 20 had to get close to each other.

Nadine Schieritz and Andreas Größler

Economic Dynamics – Macroeconomic Dynamics (Wednesday 11:30 AM)

The Economic Dynamics parallel session consisted of three papers, two of which explored ways of bringing together system dynamics and economics and one paper on a concrete application in which a system dynamics model challenges mainstream economic findings.

The motivation of the *first paper* by Kaoru Yamaguchi, entitled "Money Supply and Creation of Deposits – SD Macroeconomic Modeling (1) –", is twofold: how to teach macroeconomics to students in an interesting way, and the contribution of system dynamics to traditional macroeconomic modeling. The paper is the first in a planned series by Yamaguchi that tries to model macroeconomic dynamics from a system dynamics perspective. It offers a qualitative overview of the macroeconomic system and a quantitative model of the money supply sector.

In the *second paper* entitled "Expectation Formation and Parameter Estimation in Uncertain Dynamical Systems: The System Dynamics Approach to Post Keynesian-Institutional Economics", Michael Radzicki extends his line of thinking from previous papers about forming a superior form of heterodox economics by combining Post Keynesian economics, institutional economics and system dynamics. The paper offers four central insights. First, it shows how a bounded rational system dynamics expectations structure can successfully mimic actual human expectations data. Second, it shows how adding the bounded rational system dynamics expectations structure to the Harrod growth model, in a manner consistent with Harrod's original description, yields both a trend and a cycle and thus supports Harrod's belief that his model could explain economic growth and instability. This result also suggests that the well-known "Harrod Knife-Edge Problem" does not exist. Third, the paper shows how the modified Harrod model can be tightly fit to U.S. macroeconomic data and parameterized via the use of FIMLOF. Finally, it discusses issues related to parameter estimation and curve fitting and shows that they are only a small but important part of the system dynamics modeling process.

The *third paper*, "An economic analysis of the PAYG retirement system and the expected consequences from a transition to an FF scheme" by Lazaros Petrides and Brian Dangerfield investigates the basic problems associated with financing retirement. It analyzes the currently prevailing Pay-As-You-Go system and the expected consequences, from a traditional economic perspective, of a transition to a Fully-Funded scheme. Modeling the transition from a PAYG to an FF scheme shows that, despite ultimately producing the same effects as those predicted by standard economic theory, different reasons are identified as responsible for bringing them about when seen from a system dynamics point of view.

The *discussion* centered, among others, around the question of modeling an entire economy. While it is useful for the purpose of teaching to have a causal loop diagram of the entire economy, quantitative modeling should have a specific focus in mind.

Birgit Kopainsky

Health Service Provision Parallel Session (Wednesday 11:30 AM)

Exploring the Feedback Effects of Reconfiguring Health Services: The Case of Cardiac Catheterization Procedures by Kathryn Taylor, Brian Dangerfield

Staff Retention and Job Satisfaction at a Hospital Clinic: A Case Study by Paul Holmstrom, Marie Elf

Modeling the Dynamics of Health Care Services For Improved Chronic Illness Management by Gary Hirsch, Jack Homer

The Audience completely filled the small room.

Kathy Taylor described the feedback effects of the UK NHS Policy of Shifting the Balance of Tertiary Services closer to home by describing the effects of moving low risk cardiac catheterization interventions (referred by outpatients) to two district hospitals, one as a temporary measure and the other as a longer-term expansion. She described stimulation in demand due to a marketing effect driven by patients and a skills effect including overconfidence by junior doctors. More strictly controlled guidelines for referral prevented supply-induced demand in one hospital. The main incentive was to avoid financial penalties due to excessive wait times, which

included close monitoring of wait list numbers (this difference between wait list and wait time was clarified in several questions).

Paul Holmstrom described staff retention problems following the merger of birthing and maternity units in Sweden resulting in staff reductions and followed by an increase in birth numbers. This was exacerbated by summer holidays when a third of the staff took 3 weeks off. Staff scheduling did not adequately adjust for experience level and there appeared to be an underlying lack of continuity and continual disruption, which affected "socialization and learning". Additional word of mouth effects made it harder to attract new staff when current staff left due to work pressure.

Jack Homer described insights based on Pursuing Perfection work in preventing long term complications of diabetes and heart failure by shifting more work to primary care providers. The long-term benefits were jeopardized by short-term workload and reimbursement effects, which could be minimized by increasing clinical care nurse specialists in advance of demand, cross subsidies of short-term losers by long-term winners and investment in tools to increase clinical efficiency. Short-term increases in waiting time could permanently reduce referrals of new patients to the program.

Gary Hirsch described insights from his Microworlds work that highlight the dangers of aggressively expanding Chronic Illness Management Programs before first increasing the capacity and efficiency of the delivery systems within which they operate. He described how the Microworld was originally developed to help healthcare providers in the US better understand changes going on during the mid-1990's such as the shift from fee-for-service to capitation and creation of integrated delivery systems. He then showed a set of simulations in which chronic illness management programs were adopted. One in which adoption occurred before capacity and productivity could be expanded sufficiently resulted in long waits for patients and a meltdown of capacity as financial distress caused providers to leave. In another simulation, delaying chronic illness program implementation until capacity had expanded produced much better results in terms of financial performance and patient health status.

Each paper had several questions with good discussion and audience involvement.

Geoff McDonnell

Parallel Session: Methodology - User Issues (Wednesday 11:30 AM)

The session 'Methodology - User Issues' consisted of two presentations. The first presentation was by **Thomas Binder** of the University of Lübeck. Together with **Andreas Vox** (Lübeck) and **Mats Svensson** (University of Lund), he has developed a way of constructing Stock and Flow diagrams (SFDs) from existing Causal Loop diagrams (CLDs). A semi-automatic software tool uses two intermediary stages – so-called labelled CLDs and structured CLDs to make the transition on the basis of equivalence. It is a systematic approach, but it is important to remember that "one does still have to think" about the process.

In the second presentation, **Mohammad Mojtahedzadeh** (Attune Group Inc., NY, USA) gave a demonstration of his Exposé tool. Exposé is an add-in to Microsoft Excel that brings systems thinking capabilities to the spreadsheet. It visualizes structures in Excel to help users find stocks, loops and other SD concepts in their (existing) spreadsheets, in addition to the numerical way represented by Excel. There is also a possibility to run different scenarios and compare results graphically.

Rutger Mooy

Plenary Session by David Lane and E. Husemann: Movie marketing strategy formation with system dynamics: Towards a multi-disciplinary adoption/diffusion theory of cinema-going. (Wednesday 5:00 PM)

This plenary session presented a very interesting application of classical diffusion theories adapted to marketing in the case of movies. The guiding question of this research was appealing: Why the product lifecycle of many movies is so short?

To explore this phenomenon, the authors draw on diffusion theories found in the domains of sociology, epidemiology, and marketing to cogently argue why movie marketing follows similar diffusion processes. The idea that movie marketing uses mechanisms of word-of-mouth, advertisement, positive network externalities, and disengagement is highly plausible. Examples were provided to illustrate all points.

The model is used for the analysis of marketing strategies and the results suggest that, whether the film is of high or low appeal, a short product life is part of a robust marketing strategy. Two strategies are identified to improve adoption. First, delaying the release of a film together with intensive pre-release advertisement. The second strategy deals with distribution, increasing the number of screens leads to better payoffs.

Finally, the presentation was followed by interesting reactions of the audience. For example, what is the relationship of short-product life with the subsequent release of DVD sales? How strongly may adoption be influenced by interest arising from previous movies and/or books? How is illegal video piracy affecting the amount of potential viewers of a movie?

Carlos Yepez

Summary of All Security and Safety Sessions

It is true, 9/11 and terrorism made security a hot topic, and resources are increasingly being devoted to this line of research. However, there are a number of other reasons why security and safety are increasingly of concern. This review of these sessions aims to provide the reader with an overview of the issues discussed in Oxford, and introduce you to the people behind this work.

There were five events covering this topic: two parallel sessions, one in "public security and safety," and the other on "information security," involving altogether seven presentations; one interactive session involving five posters; one colloquium to discuss two PhD dissertation proposals, and the Security SIG (reported separately in this issue by Klaus Breuer). To look at the intersections and complementarities across these pieces of work, we prepared three tables, one for each of the formal sessions. These tables include presenting authors, research topics, problem statements, geographic locations, and organizational affiliations.

Here is a summary of findings:

- There were 31 researchers listed as authors and coauthors (although two papers, both describing group model building interventions had 5 and 11 authors –almost half of the contingent)
- The topics varied somewhat:
  - 4 papers were concerned with the interaction between the human and technical aspects in security of information systems, emphasizing security policy and management, and factors that increase (or "trigger") organizational vulnerabilities (Trcek; Andersen *et al.*; Torres and Sarriegui), as well as examining the impact of behavioral factors in the software vulnerability lifecycle (Wiik *et al.*)
  - 2 interrelated papers addressed the issue of warfare decision-making, with special focus upon information overload and timely handling of complexity and uncertainty, one of which described a learning environment used to improve mental models of commanders and teams (Bjørn Bakken *et al.*)
  - 2 papers were related to the criminal justice system, one addressing the issue of domestic violence, specifically violence against women (Hovmand), and the other examining cultural barriers to crime control effectiveness (Rouwette *et al.*)
  - 1 paper investigated propagating effects of large-scale disruptive events in an agricultural system, examining in specific the impact of spread of foot-and-mouth disease (Conrad)
  - 1 paper had an international development focus, addressing the issues of democracy and governance, using a SD model to explain rapid social, economic and political disintegration in a developing country (Ellis)
  - 1 paper proposed setting up a theory-based diagnostic system within a simulation environment used for crisis management and control (Breuer and Molkenthin)
  - 1 paper examined the cultural and financial impediments to closing the technology gap between US and European defense budgets (Bent Bakken)

- The geographic distribution of the research is concentrated in the United States and Europe (specifically Norway, The Netherlands, Spain, Germany and Slovenia). In addition there was an analysis involving Venezuela
- Several of the papers resulted from the collaborative effort of multiple organizations. At least 25 different organizations were involved in this collection of papers, mostly public, academic, and consultants

All of these papers addressed issues of public interest. The increasing reliance on large scale, widely interconnected information systems (e.g. the Web), and the complexity of the underlying technologies, amplifies the potential consequences of security threats, and puts a big strain on individual, team and organizational capability to manage information and technology effectively. "'Rather than replacing the so-called low-tech threat,' the technology advances are just adding to the spectrum of crimes," according to Bruce Townsend, deputy assistant director for the U.S. Secret Service (*The Wall Street Journal*, 08/24/04, pp. C-1/5). The number of cyber security incidents, for example, has approximately doubled every year for the last six years, reaching more than 137,000 in 2003 (Andersen *et al.*). Each security incident may involve hundreds, or even thousands, of sites and may involve ongoing activity for long periods of time. However, from the point of view of any single organization, the probability of a catastrophic cyber attack may be unlikely, and standard organizational operating procedures for cyber security tend to evolve in response to attacks rather than in anticipation of new attack modes. Therefore, interdisciplinary research that crosses organizational, sector and national boundaries is required.

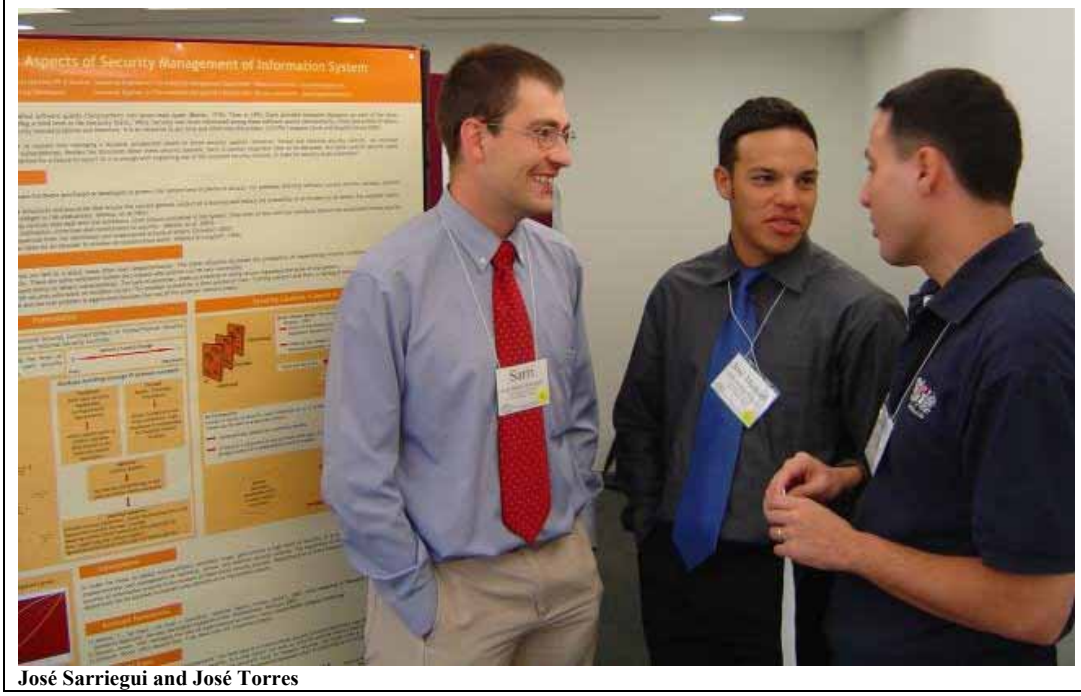
There is an urgent need for developing faster recognition and implementation of effective security measures, for better handling complexity, uncertainty, and information overload in decision making, for addressing the interaction of behavioral factors and technology, as well as to continue to examine multiple areas of application such as governance, criminal justice and industry, to cite a few examples. José Gonzalez, Security SIG Chair and special interest session convener, has played an important role in bringing together a critical mass to this challenging and vast research area. We welcome you to join in and contribute to this line of research.

Table 1. **Public Security and Safety** (public policy)

Bjørn Bakken *et al.*	Stephen Conrad	Peter Hovmand	Etiënne Rouwette, Wouter Jongebreurs *et al.*
			
Topic: Perception and handling of complexity: military command and crisis management	Topic: Responses to disruptions in agricultural commodities (policy evaluation)	Topic: Managing domestic violence (against women) caseloads in the criminal justice system	Topic: Modeling crime control (group model building)
Problem: Timely handling of complexity, information overload and uncertainty in warfare decision making	Problem: Propagating effects of large-scale disruptive events in agriculture, such as foot-and-mouth disease (FMD)	Problem: Case dispositions being effected by caseloads; balancing competing goals: case/resource management and accountability	Problem: Cultural barriers to effectiveness: interplay between context, caseloads and investments in the criminal justice system

Table 2. **Information Security**

Denis Trcek	David Andersen, Dawn Cappelli et al.	Johannes Wiik et al.
		
Topic: Security policy management	Topic: Insider cyber-threat problem: dynamic triggers such as detection, trust and emboldening (group model building)	Topic: Software-based vulnerabilities lifecycle: discovery, attacks and patches
Problem: Organizational and human factors in security of information systems, vis-à-vis existing focus on technology	Problem: Improving org. security and survivability by detecting precursor events, avoiding trust traps, and managing attacker risk-perception	Problem: Non-technical, human and organizational actions and interactions that impact the software vulnerability lifecycle



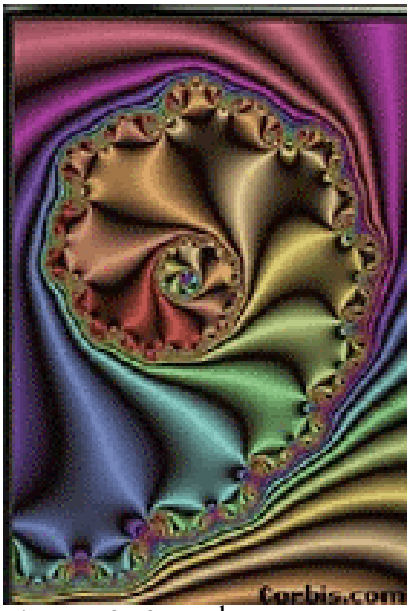
José Sarriegui and José Torres

Table 3. **Security Posters**

R. Evan Ellis	Bjørn Bakken et al.	José M. Torres and José M. Sarriegui	Klaus Breuer and René Molkenthin	Bent Erik Bakken
Topic: Social, economic and political destabilization	Topic: Learning lab for military operations	Topic: Security management of information systems	Topic: Diagnostic-based simulations	Topic: Defense technology gap
Problem: Explaining rapid social, economic and political disintegration in an insipient democratic system (democracy and governance)	Problem: Improvement of mental models of teams and commanders through man-machine and inter-team interactions using a micro world	Problem: Management of info. systems security through *technical*, *formal* and *informal* controls, to minimize risk of security failures	Problem: Setting up a theory-based diagnostic system for decision making under complexity for crisis mgmt and control	Problem: Closing the technology gap between US and European defense budgets; cultural and financial impediments
Organization: ***USA*** – Booz Allen Hamilton, Inc.	Organizations: ***Norway*** – Norwegian Defense Leadership Institute; Norwegian Defense Academy	Organization: ***Spain*** – TECNUN, University of Navarra	Organization: ***Germany*** – Johannes Gutenberg-Universität Mainz	Organization: ***Norway*** – Norwegian Defense Research Establishment

Aldo Zagonel

Summary of Chapter Meetings and Special Interest Group Meetings at the Oxford Conference



Picture of a fractal[1]

SD-Chapters and SIGs (Special Interest Groups) of the System Dynamics Society are clearly defined (see policy 8 of the System Dynamics Society Policies, and the links "Formation of a SIG or a Chapter on the Society's activities homepage). However, they are also very complex and infinitely detailed. Therefore, writing a short report on their nature and activities at the ISDC in Oxford could become very challenging. I can zoom in on a section and it will have just as much detail as the whole System Dynamics Society or its Conference.

Nevertheless, they are forming patterns of behaviour that represents somehow also the overall momentum of the Society.

In the course of the 22nd ISDC in Oxford the Chapters and SIGs became visible the first time in the Policy Council Meeting on Sunday. The VP Chapters Ginny Wiley reported thirteen chapters and four SIGs; two more for each are expected for next year. Since momentum radiates from the Chapters and SIGs that also affects the Society, it is desired that the Chapters and SIG submit an annual report.

- Is this one way how the Society can become early enough responsive to changes on the small scale that might affect things on the large scale?

On Monday during lunchtime there were several Special Interest Group Meetings. People from all over the world having similar topic interests met each other. They discussed possible ways of concerted actions and organisational issues. The following five meetings took place:

- the Environmental Dynamics SIG Administrative meeting
- the Education Special Interest Group meeting
- the Security Interest Group meeting
- the Economic Dynamics Chapter meeting
- the Health Policy Special Interest Group meeting

These subsets were defined by common topics and are mostly organised as Special Interest Groups. One exception is the Economic Dynamics Chapter. It created some tensions for other subgroups.

- Have they chosen the right structure for their purpose?

Chapters and SIGs mainly differ in respect of formal requirements, their responsibilities and publication rights – e.g. the Environmental Dynamics SIG had to adjust their publication plans accordingly (see the Society Activities page).

On Tuesday early in the morning (perhaps too early), there were eight Chapter meetings taking place delineated on the basis of location: UK, Australasia, Swiss, Italian, Hellenic Latin, Brazilian, and Korean. The Society's activities homepage offers a great and efficient platform for pooling the information about Chapter and SIG activities by relying on their information tools.

The Chapters Representatives Meeting on Tuesday evening showed that the Chapters could learn from each other in discussing the question "what is working well?" in order to create momentum within the Chapter or the SIG. Issues were discussed about the coordination and collection of member fees, complying to national law, activities and duties of the chapters as well as sponsoring.

Finally, in the Society Business Meeting on Wednesday morning the main messages from the Chapters and SIGs to the society could be formulated. The submitted messages also showed that cooperation and collegiality within the subgroups and the Society is crucial. Organizing convergent forces in learning subgroups, and ensuring the information exchange seems to be an important element for the overall momentum of the society.

The fractal metaphor indicates that the formation of additional Chapters and SIGs is highly desired, in order to sustain the growth of a smoothed and ordered Society!

1 http://www.mathjmendl.org/chaos/#intro

Silvia Ulli-Beer

Letters from Conference Participants

Many thanks…for a wonderful conference. For me, it was my first System Dynamics Society conference and it was excellent from various perspectives e.g. the diversity and calibre of participants (most of whom are authors and known "gurus" in system dynamics) was more like a collection of the best minds in the field and the quality of papers presented by PhD students as well as consulting practitioners was inspiring. And when these are added to the environment within which it was held i.e. Keble College, Oxford University, you then have all the makings of a highly organised and treasured conference. I look forward to being in Boston next year.

Charles D. Banigo

I certainly enjoyed the conference. I learned quite a bit, saw some papers that will help me refine our work for the future, and received numerous suggestions on how to improve our existing model. The people were great, the atmosphere was nice, and material was well done. And I don't think I ever drank as much tea as I did in those few days.

Jeff Boyer

Just a short note to sincerely thank all of you for hosting an excellent conference, I really enjoyed it and am already looking forward to 2005!

Jim Duggan

I had been to receptions at museums in the States, but I was not prepared for what I saw when I walked into the Oxford University Museum of Natural History. My senses were overwhelmed by the number and uniqueness of the exhibits. Wine and cheese under the skeleton of a T-Rex is probably something I will not do again in this lifetime.

Rod MacDonald

Since this was so much fun, should we do it twice a year?

Warren Tignor

Announcements and Call for Papers

MIT System Dynamics Group Literature Collection Now Available

The MIT System Dynamics Group Literature Collection, available in DVD or CD format, contains over 3500 D-memos, along with theses, publications, the Guided Study Program, the Road Map series and miscellaneous papers selected by Jay W. Forrester. The collection spans nearly fifty years of work in system dynamics, and reveals a rich historical point of view. Professor Forrester has selected this comprehensive collection to include substantive materials.

This powerful tool will advance your knowledge of the important history of the field at MIT and help build a foundation for understanding future growth.

The collection, based on the famous D-memos, spans nearly fifty years of work in system dynamics, and reveals a rich historical point of view.

You will find:

- Working papers on the National Model
- MIT Doctoral and Master's theses by well-known practitioners
- Assignments and solutions from the self-teaching Guided Study Program, a three-year experiment in the 1990's to teach system dynamics as distance learning course
- Instructional materials from the Road Maps series
- Selected published papers
- Published papers reference section with complete citations & abstracts

First reactions from users…

"An essential historical reference for anyone serious about system dynamics."
John Sterman, MIT

"The definitive source for the serious practitioner – this is a 'must have' reference for regular use."
Nick Pudar, General Motors Corporation

"Fascinating history, significant now, helpful in the future."
George Richardson, University at Albany

"This is a gem."
Rod MacDonald, Initiative for System Dynamics in the Public Sector

"Over the years, I've paid $500 or more for copies of a few PhD system dynamics theses from the MIT library. The inclusion of PhD and masters theses makes this DVD an incredible bargain."
Jim Thompson, Cigna Health Care

The collection's lists are searchable by author and words in the titles, but due to the electronic scanning and compression process used, the pdf files cannot be searched for text. Also included is a searchable and sortable Excel spreadsheet for the collection's D-memos only - not the entire collection. Included is a ReadMe file with full user instructions. Some works are in draft form and were later published. It is recommended that for citing purposes, the final, published work be used.

Please contact the Society office for prices and shipping information, or use the order form found at http://www.systemdynamics.org/MITCollectionOrderForm.pdf

Latin American Conference Announcement

The Latin American Chapter of the Society decided last November to hold the "Second Latin-American System Dynamics Conference"(November 18-19, 2004) in Chile! It will be a great opportunity for people to share experiences. Since the goal of the Latin-American Chapter is to promote system dynamics while avoiding the language barrier, the working language is Spanish. One area of interest of the conference and the Chapter is to foster the incorporation of system dynamics in university curricula. For now, the first task could be to help people studying to become teachers by making K-12 material (like the Creative Learning Exchange newsletters and others) available in Spanish.

Quite a number of proposed papers have already been received. The program chair is Isaac Dyner (Colombia); Martin F. G. Schaffernicht is in charge of the Organizing Committee, together with Gloria Perez (Mexico).

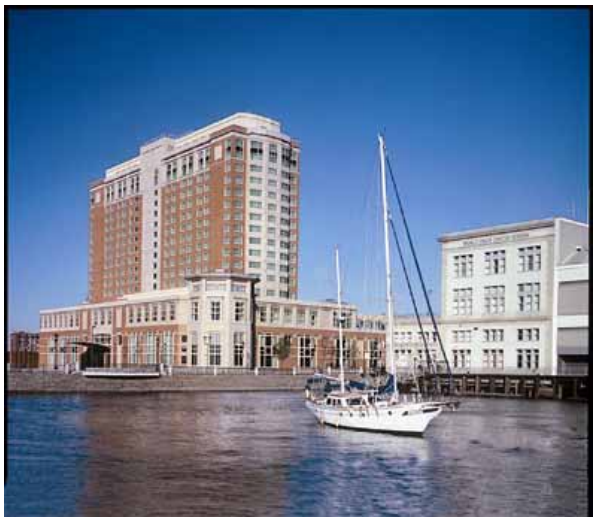
If there are Spanish-speaking scholars or students out there who are not subscribed to the Spanish discussion list but are interested in attending the conference, please contact Dr. Martin Schaffernicht (martin@utalca.cl) in order to receive a call for papers.

For more information visit the conference website at http://dinamicasistemas.utalca.cl/ or contact Dr. Martin Schaffernicht, (martin@utalca.cl) Universidad de Talca. Also, please visit the chapter's website: http://dinamica-sistemas.mty.itesm.mx/

2005 International System Dynamics Conference, Boston, Massachusetts, USA

Local Host

System Dynamics Group, Massachusetts Institute of Technology,
Sloan School of Management, Cambridge, Massachusetts USA



Conference Venue

The Seaport Hotel in historic Boston offers the finest meeting destination facility on the city's vibrant harbor. It is in the heart of Boston's Seaport District overlooking the breathtaking panoramic view of Boston Harbor and the city skyline. It is located within minutes of the airport, financial district and the downtown area, filled with restaurants, shops, museums and attractions. Public spaces at the Seaport have wireless Wi-Fi access and each guest room is equipped with complimentary Internet/VPN access at T-1 speed. For more details and information please visit: http://www.seaportboston.com

Program

The conference program will consist of plenary, parallel, poster and workshop sessions demonstrating the state of the art in the theory and application of system dynamics. In addition, panel discussions, special interest group sessions, student colloquia, modeling assistance workshops, events of historic interest, vendor displays, exhibits, demonstrations, Society business meetings and other related gatherings will be scheduled. The conference schedule will provide time for relaxed social and professional

interaction. The conference will bring together diverse perspectives on the application of system dynamics to broaden perspectives and foster dialogue and debate.

Deadlines and Key Dates

January 2, 2005	Opening date for paper submissions and workshop and session proposals.
March 18, 2005	Paper submission deadline. Workshop and session proposals due.
May 2, 2005	Notification of acceptance.
May 9, 2005	Final abstracts due for Printed Abstract Proceedings.
June 1, 2005	Tentative program schedule.
June 17, 2005	Deadline for early conference registration and hotel. Papers of unregistered designated presenters reassigned to poster.
July 17, 2005	PhD Colloquium, Policy Council Meeting.
July 18, 2005	Boston Conference Opening!
August 19, 2005	Deadline for final papers for CD-ROM Proceedings.
September 2005	CD-ROM Proceedings mailed to conference registrants.

Contacts

Program Co-chairs: John D. Sterman and Nelson P. Repenning MIT, Sloan School of Management Cambridge, Massachusetts USA E-mail: isdc05@mit.edu	Conference Manager: Roberta L. Spencer, Executive Director System Dynamics Society Milne 300 - Rockefeller College University at Albany State University of New York Albany, NY 12222 USA Phone: +1 518 442-3865, Fax: +1 518 442-3398 E-mail: system.dynamics@albany.edu
Workshop Chair: Jack B. Homer, Homer Consulting Voorhees, New Jersey USA E-mail: jhomer@comcast.net	

For updated details, please visit the Society website at: http://www.systemdynamics.org

Chapter and SIG News

Chapter and Special Interest Group Overview

Our Chapters are growing! The Society currently has thirteen chapters: Australasia, Brazil, China, Economic Dynamics, Egypt, Hellenic, Italy, Japan, Korea, Latin America, Student, Swiss, and the United Kingdom. To find the list of Chapters, Chapter reports, contact information and their representatives, please visit the Society website at http://www.systemdynamics.org/society_activities.htm and scroll down to Chapters.

There are currently four Special Interest Groups: Education, Environmental Dynamics, Health Policy, and Security. Contact information for these groups is listed on the website under Society Activities: http://www.systemdynamics.org/society_activities.htm

For information on how to start a chapter or special interest group, please contact Ginny Wiley, VP Members and Chapters, at ginnyw@pegasuscom.com

Brazil

The Brazilian Society (Sociedade Brasileira de Dinâmica de Sistemas – SBDS), which hosts the SDS-BC was founded on February 13, 2003 and the SDS accepted the Brazilian special interest group SDS-BC in July 2003. On the same day of the foundation we elected the President: Pierre Jacques Ehrlich and the two Vice-Presidents: Romeu Telma and John Edwin Mein for the first two years term. At the same time we elected the other seven directors (according to our bylaws), some of them for a two years term and the others for a four years term.

We started by organizing a special interest Internet group which, by now serves around 140 people from all over the country. At the same time we had to have our bylaws rewritten several times to obtain the final approval from

the Brazilian authorities and get an IRS reference number required to open our bank account. These legal procedures had to be followed although we are a non-profit organization. By now we have our own Internet site: www.espm.br/sbds which will very soon change to: www.sbds.org.br

Along the year we held several meetings at FGV-EAESP and at USP-Poli, always in São Paulo, but with the presence of members from other regions of Brazil. These meetings were helpful to exchange experiences, to organize ourselves as a society and to stimulate courses to be offered by several teaching institutions.

On August 20, 2004 we held our First full day National Symposium in São Paulo, at FGV-EAESP, under the sponsorship of FGV-EAESP, ESPM-SP and USP-Poli. Ten formal presentations were delivered by guest speakers, on top of a round table discussion on the future of SD in Brazil. We had 120 participants – 70 already known from the Internet special interest group and another 50 new interested people. We charged BRL$ 100 for the participation and started the formal procedure for membership (charging the annual fee). The symposium was a success and we got enough cash to pursue with our activities. We had decided to delay formal membership enrolment as well as fees collection until we could deliver a prestigious activity.

At present we started with the organization of our First Conference to be held in São Paulo, June 3-5, 2005. Up to now we settled the organizing committee, the local, the scientific committee (to select the papers), some workshops, and we are about to issue the first invitations for international guest speakers. In March – April 2005 we should have new elections according to our bylaws, and the new elected direction will be presented at the occasion of the Conference.

Pierre J. Ehrlich

China

National Symposium on System Dynamics, August 20-22, 2004

The National Symposium on System Dynamics, 2004, which was sponsored by the System Dynamics Chapter of the Systems Engineering Society of China and University of Shanghai for Science and Technology (USST) and supported by Shanghai Jiaotong University and Tongji University etc., declared its opening on August 21 in the USST and the symposium lasted for two days. Symposium Chairman Mr. Wang Qifan, who is also Professor and Ph.D. supervisor of Fudan University and Tongji University, Dean of the Development Institute of Tongji University, Chaired the opening ceremony. Vice President of USST Zhang Minghao and the Head of the School of Management Qiu Xisheng gave greeting speeches. More than 60 experts, scholars, formal representatives and 30 informal representatives attended the Symposium. Among them there are Professor and Ph.D. supervisor Xu Qingrui from Zhejiang University, who is also the Vice Chairman of the Symposium, Professor and Ph.D. supervisor Wu Xijun from Nanjing University of Technology, who is also the former vice Governor of Jiangsu Province, vice Director of the People's Congress of Jiangsu Province, Chairman of board of directors of the Institute of Development of S&T of China, Jiangsu Branch, Professor Che Hong'an from USST, who is also the Vice Chairman of the Shanghai Association of Systems Engineering, Professor and Ph.D. supervisor Yan Guangle from USST, Professor and Ph.D. supervisor Chen Hongmin from Shanghai Jiaotong University, Professor and Ph.D. supervisor Jia Ren'an from Nanchang University and Researcher Li Zhouwei from Research Center of People's Government of Xinjiang Autonomous Region. More than 30 theses and reports were presented to the symposium.

Professor Wu Xijun, Jia Ren'an, Yuan Yonggen, Qifan Wang/Jia Jianguo and Yan Guangle delivered their speeches around the theme of "Theory, Methodology and New Development in Application of System Dynamics." Titles of some of the relevant reports are "Application of Systems Thinking and System Dynamics in the Education of Teenagers," "Generating Method of the Basic In-Tree model of System Rate and its Application in Agriculture," "Research of Simulation and Decision-making in the Resource Reallocation in the People's Hospital of Jiangsu Province," "System Dynamics Study on Complexity,"(Qifan Wang/Jia Jianguo) "Talking about Mibiwusi Paper Ring--Study of the Evolution of Complex Systems with Band Boundary." Three parallel sessions on different themes were held and thorough discussion on some of the theses presented was conducted. System Dynamics has found its wide application in many fields such as Finance, Education, Commerce, Enterprise, and Agriculture etc. Through this Symposium, the study of the theory and application of System Dynamics was enhanced, communication among the researchers of Systems Science, Management Science,

Economics and Computer Science was strengthened, new research results were presented and new questions were raised for further discussion, consideration and study for the experts and scholars. Some of the questions raised are the possibilities of the combination of the research of topologic structure of complex systems and system dynamics, a better combination of both the theory and application of system dynamics and the spreading of the education of systems thinking and system dynamics in primary and middle schools.

Professor Xu Qingrui, Vice Chairman of the Symposium, chaired the closing ceremony on August 22. At the ceremony affairs of establishment and utilization of web station of System Dynamics, preparation work of International Conference of System Dynamics in Asian and Pacific Region, 2005 and the reelection of the board of director of the new term of the System Dynamics Chapter of the Systems Engineering Society of China were introduced. After that Professor Wang Henshan, Dean of the College of Management, gave an ending speech, the Symposium ended successfully with its anticipated goal reached.

Qifan Wang

Hellenic

The members of the Hellenic Chapter of SDS (HCSDS) that participated in the 22 SDC held their meeting on the gardens of the college enjoying traditionally warm beer. As members are based in more than one country one both sides of the Atlantic, the first task was to get acquainted with each other's recent work. Niko Georgantzas updated members on the main activities of the chapter's board since its birth, almost a year ago. The core of the discussion was devoted on future work with the aim of broadening the community of SD practitioners in Greece.

It was decided that our efforts should focus in educational activities (e.g. summer schools, development of courses), participation major events and publicity events as well as the strengthening of Hellenic participation in future SDCs and SD publishing in the international community. The Chapter held a general meeting on Friday 1st October 2004 for the election of its new board. Thirty (30) members of the HCSDS voted in situ as well as electronically.

The new board is now composed of:

1. Dr George Papaioannou HRM Director of PPC, and CRANS researcher of the University of Patras, Greece
2. Patroclos Georgiadis, Professor of the Aristotle University of Thessaloniki, Greece
3. Dr George Staboulis, Assistant Professor, University of Thessaly, Greece
4. Nicolas Georgantzas, Professor of Fordham University, N.Y., USA , and
5. George Adamidis, Assistant Professor, University of Patras, Greece.

The above members will soon meet together to “assign” the positions of President, Vice President, Secretary / Communications and Treasurer, according to the Constitution of HCSDS.

The Chapter now has grown to 30 members. New members have recently joined the group and there are a few new applications (one for corporate membership). We have scheduled a number of activities the main of which are the following:

1. Organize the first Hellenic Conference in System Dynamic, in Athens. We are planning to invite a ‘well-known’ speaker, member of SDS (from USA or U.K.). Roughly, about 50 to 80 people are expected to participate.
2. The publication, in a number of Greek newspapers with good circulation, of articles related to SD and its application, on an introductory level, so people can learn something about the subject.
3. The setting of links with other Greek Scientific Organizations, with similar content, (e.g. The Center of Research and Applications of Nonlinear Systems of the University of Patras, the Greek Operational Research Organization etc.). The creation of SD “tracks” in their conferences will be a good idea.

4. Organizing an annual Summer School and Conference on System Dynamics, in cooperation with a Greek University.
5. Publish a HCSDS News Letter (in electronic format).

Our financial status is considerably improved. The Chapter received financial support from Mr Alex Karloutsos, a resident of NY, thanks to great efforts of Professor Georgantzas. Dr G. Papaioannou, has recently succeeded in obtaining another financial support from his Company, Public Power Corporation. We plan also to make a 'marketing' plan, hoping to help us increase the number of members of our group.

In the meeting, after the elections, the members had also the opportunity to discuss a number of SD current 'theoretical' issues. Some of the participants suggested, among other, that SD should concentrate on two aspects. First they agreed that there is a need for a combination of SD-Systems Thinking approach with the traditional and more "mathematically" oriented theory of Dynamical Systems. It is believed that this will strengthen further its theoretical foundations. Second, they pointed out that SD has to set firm links with the Complexity Theory Group (Agent Based Modeling etc.) as it is expressed through the work done in the Santa Fe Institute, especially on applications in the areas of Management, decision sciences and Organizations theory.

Best regards from us and all other members of the newly elected Board.

Dr George Papaioannou and Dr George Stamboulis

Korea

In Korea, system dynamics has been an early stage because of a short history. KSDS is building a concrete infrastructure in Korea quantitatively as well as qualitatively. The Korean system dynamics society is composed of more than 200 members in 2004. The target of next year is set to exceed 300 members. Our society has also increased the recognition by applying to various areas. System dynamics mania increases over time. The areas applying system dynamics is expanding from energy study to public policy and business. Specifically, two new projects from government started this year. These are expected to increase the recognition of system dynamics and provide the opportunities of practical applications.

The 2004 summer conference was held on August 28 in Daejeon. The 2004 fall conference will be held in November in Seoul. Many people have started to pay attention to the system dynamics approach in Korea, specifically from business and industrial area. Our society is requesting the systematic approach in decision making such as government policies. This new trend in Korea is expected to widen the application of system dynamics.

Six members from KSDS attended the 2004 international system dynamics conference in Oxford. 3 papers were submitted including one display. The current president of KSDS is Dr. Nam-Sung Ahn, PhD, who is working in Korea Electric Power Research Institute. Dr. Ahn was elected as a new president of KSDS. He will serve for two years. The KSDS recently developed a homepage, which includes communication among members, introduction of new news. The web site for KSDS is www.ksds.net. It is introduced by Korean language only. The places for foreigners will be prepared soon.

Nam-Sung Ahn

Latin America

The Latin American Chapter of the System Dynamics Society continues its accelerated progress. It actively participated in the past Oxford Conference and is now at the verge of its II Congress that will take place at the legendry city of Talca, Chile, November 18-20. Over 50 papers will be presented and will include plenary and a number of parallel sessions. We are honored by the confirmation of contributions from the Latin American region and from the US and various European countries. We welcome your participation in this important event. For more information please contact us at http://dinamica-sistemas.mty.itesm.mx/

We would like to share a significant happening with all our colleagues and friends. The Chapter is launching in October 2004 its quarterly bulletin under the direction of Martin Schaffernicht. Its broad objectives include informing about news, interviews, projects and personalities of the System Dynamics community. It will report on papers, books and, by and large, on the impact of SD over society.

Gloria Perez and her team at the Monterrey Institute of Technology, Mexico, remain as active as ever. They are in charged of our web page and the electronic list and Gloria has always been supportive of the different Chapter activities.

The Colombian group led by our colleagues Hugo Andrade, Andrick Parra and Ricardo Sotaquira from the UIS and UNAB universities organized in the Caribbean City of Santa Marta, September 2004, the second national SD conference (third academic meeting). Thirty papers from diverse universities were presented. Over 100 enthusiastic participants were involved, including professors and students from far away regions of the country.

Isaac Dyner

Swiss

For more than ten years several System Dynamicists (practitioners and academics) have been active in Switzerland. However, System Dynamics has not yet been widely taught at the graduate level. There are some exceptions: The University Lugano with Prof. Gianluca Colombo and the University of St.Gallen, where Prof. Markus Schwaninger has been offering System Dynamics courses for several years. This provided a good precondition for an initiative to found a Swiss SD-chapter in 2003. This initiative was taken by Silvia Ulli-Beer with the help of Thomas Hamann and Birgit Kopainsky.

Kick-off meeting on 10 October 2003
The Swiss SD-Chapter was officially founded at the Kick-off meeting on October 10 th, 2003 at the Tapas Restaurant in Zurich. The guest of honour at the Kick-off meeting was Prof. George Richardson.

At the second chapter meeting on December 5th, 2003 the Constitution of the Swiss Chapter of the System Dynamics Society was approved and the Council members were elected.

Approval from the policy council of the System Dynamics Society on 9 February 2004
On February 9th, 2004 the Swiss-SD-chapter was formally accepted into the System Dynamics Society at its policy council meeting.

Activities 2004
Since its founding the Swiss SD-Chapter has become a learning SD-group with more than 15 active people. They have established several institutions that foster the exchange between the research and application sides of System Dynamics and help to increase the professional standard.

The following institution / structures have been established

- The Swiss-SD-chapter meetings; taking place 4 times a year
- The Roundtable for students in the field of System Dynamics and related disciplines; taking place 6 times a year
- The Community of Practice on SD in Consulting
- The Swiss-SD-web-page
  http://www.ikaoe.unibe.ch/forschung/swiss-system-dynamics-chapter/
- The mentorship of Prof M. Schwaninger
- A Swiss Chapter for System-Dynamics in education founded by the School for Higher Education of Zurich at Winterthur (Zürcher Hochschule Winterthur) on May 8th, 2004
- An address-file of our members and interested persons, being regularly updated (with currently around 50 entries)

Concrete current projects are / were:

- The candidature for the 24th ISCD 2006 in Switzerland
- The elaboration of a business plan
- The declaration of the membership and billing
- Elaboration of distinct services only for paying members (e.g. free access to the Data Base of SD-models)

Silvia Ulli-Beer and Birgit Kopainsky

UK

The UK Chapter enjoyed another successful year culminating in the hosting of the ISDC 2004 at Keble College, Oxford. This conference was a major success for the Society with a 'full house' in the dormitories. It was pleasing that a former President of the UK Chapter, Eric Wolstenholme (OLM Group) was awarded the JW Forrester prize for his paper on archetypes (SD Review (2003) 19:1 pp7-26.)

Other events were the Chapter's 6th Annual Gathering held, as usual, at Harrogate on February 5-6. Some 40 delegates attended and three speakers made presentations: Jim Thompson on US Health Care; John Swanson on transport and land use in urban areas; and Henk Akkermans on supply network dynamics. Kathy Taylor (LSE) was awarded the HVR-CSL student prize for 2004 for her paper on health care. After the usual social activities in the evening, the following morning saw the continuation of informal problem-solving tutorials led by Dave Exelby (HVR), primarily for those relatively new to the field, and a workshop session hosted by Kim Warren on strategy dynamics in action.

In Autumn 2003 the Chapter had a joint meeting with the International Council of Systems Engineers (INCOSE) on "How can Systems Engineering use SD?" Michael Kennedy of London South Bank University chaired the meeting at which David Exelby (HVR Consulting) also spoke.

Finally another joint meeting was held, this time with the SD+ Study Group of the UK Operational Research Society. The topic was SD in Defence.

Brian Dangerfield

Environmental Dynamics SIG

The Environmental Dynamics Special Interest Group (ED SIG) is entering its third year of activity. Its quantitative trends are certainly encouraging, such as an increasing membership and a great number of messages in the Group's discussion listserv, *SDsustain*. All these activity indicators are reported annually to the SDS, and they are also registered in the ED SIG's online *Administrative Guide* (http://home.utad.pt/ed/adm.pdf). It is also worth reporting some qualitative features of the Group, such as the shared sense of solidarity, unity, and disposition for work, as we felt in the ED SIG events at the 22nd ISDC, in Oxford, England.

The ED SIG holds one general meeting and one special event per year, always at the SDS conference. It is very important for the Group's members to meet with face-to-face contact, mainly to make decisions. On the other hand, online discussions are also important: they carry out all the work that prepares for the decision-making. Online discussions now take place with increased efficiency through moderation and the creation of custom-built models, support websites, and discussion digests.

This coming year the Group has the opportunity to experiment with preparing and publishing Working Papers online – in part starting with material from the online discussions. To this end, the Group has an Editorial Board to help authors produce high-quality academic communications. Building such a volume of works is important for the field, and also for the ED SIG itself – e.g. through ISI-CWC indexing. Besides producing new work, the Group continues its effort to collect existing works on Sustainable Development/ Environmental Dynamics in its online database http://home.utad.pt/ed/rdb.pdf

The ED SIG does not work in isolation: we prepare international links with other similar groups at an international scale, and also internal links withing the SDS – namely with the Economic Dynamics Chapter and the Student Chapter. In addition to the above links, the ED SIG is also forming committees to get to know better the work of other teams. In conclusion, the ED SIG is in conditions for good quality work. Join in, and enjoy yourselves!

Questions and comments: Anastássios (Tasso) Perdicoúlis, ED SIG Representative: webpage: http://home.utad.pt/~tasso E-mail: tasso@utad.pt

Anastássios (Tasso) Perdicoúlis

Health Policy SIG

The HPSIG meeting at the 2004 ISDC in Oxford was attended by 18 people and was chaired by Jack Homer and Geoff McDonnell. The group now has 64 members.

Three roles for the SIG were discussed:

- Maintaining a strong health care/health policy presence within the SD community.
- Keeping SIG members informed about health policy issues around the world.
- Adding an SD dimension to health policymaking in various countries.

Geoff McDonnell led a discussion of the various forms that a web and Internet presence for the HPSIG might take. One that he suggested was the use of an e-mail list to distribute health policy papers that are of interest to group members and will help to keep them better informed about policy issues. Geoff also indicated that he would make a list of SD-relevant health care references available to the group. Another possibility suggested for the web was a "quarterly update" that people could use to let others know what they are working on.

There was then a lengthy discussion about a potential plenary session for the 2005 ISDC in Boston that could help to further the SIG's aims, especially to begin having an influence on health policy. The focus of such a session might be applying SD to get a better understanding of why health care reform efforts in many countries have encountered stiff resistance and have not been successful. We would concentrate on the dynamics of "getting from here to there" rather than on the details of specific health reform proposals. There would be special attention to health reform difficulties in the US, but it was felt that experiences of other countries should be considered as well since some have been more successful than others have. Other suggestions included mapping how stakeholders interact with policy change, comparing how differences in organizational boundaries among countries' health care systems might affect reform, and describing the characteristics of desirable reforms. SIG members felt that this might also be a good topic for an SD Review special issue.

Preparation for the session could include engaging with policymakers from various countries to get their sense of the impediments to health care reform. These would include people from outside SD who think systemically about health policy. We could work toward an intermediate product such as a causal map of the factors affecting health reform. It was felt that this should be an inclusive process, driven forward by a small group (Homer, McDonnell, and Gary Hirsch), but open to contributions and comments by all HPSIG members. The question was raised about whether it would be possible to do something by the 2005 meeting, but the group felt that we should at least have some significant work in progress to report by then. A plenary session would present what has been developed by that point and leave plenty of time for discussion. The next step in this process will be an e-mail sent by Gary Hirsch eliciting ideas from HPSIG members about worthwhile papers on this topic of health reform and policymakers from different countries who might be involved in the on-line discussion or the plenary session.

The meeting concluded with an election of officers in which Jack was elected President and Geoff Vice-President.

Gary Hirsch

Security Policy SIG

Chaired by José J. Gonzaléz. There have been about 15 participants. The agenda held three topics. First there was a report on the activities within the SIG since the New York conference. This has included an overview to the sessions and papers contibuted by the members of the SIG to the Oxford conference (compare the report and the table provided by Aldo Zagonel). José J. Gonzaléz has made the announcement that the communication within the SIG will be supported by means of a web-site hosted at Agder University College, Norway.

Second there was an exchange on the quality of the review processes for the Oxford conference. The members have expressed concerns about its qualities and propose a more structured and in depth approach for the Boston conference.

Third there has been a presentation by Denis Trcek, Ljubljana. He has made a proposal for the development of 'security reference models' to become a standard for exchange and communication of SD-based models addressing the fields of security and of safety. The proposal has been discussed and may become an option for use within the SIG.

Klaus Breuer

Policy Council Holds Summer Meeting in Oxford

Minutes of the 23 July, 2004, Meeting of the Policy Council and the 26 July, 2004, General Business Meeting can be found in their entirety by clicking the "Governance" button on the System Dynamics Society website. To learn about the business discussed please visit the website:
http://www.systemdynamics.org/PolicyCouncil/PCmin040723.htm

Motions approved at the Policy Council Meeting:

- Proposed 2005 budget
- Nominating Committee for 2006 openings
- Associate Editors will receive complimentary copies of the SDR
- Committee to work on the capability of a web repository for models
- Conference Site Selection Guidelines
- Nijmegen, Netherlands as site for 2006 conference
- Subcommittee of Diversity in the System Dynamics Society membership
- Committee to promote diversity in membership by geography with 23 accompanying Society memberships

Motions approved electronically since the Winter 2004 Policy Council:

Revised contract with publisher John Wiley & Sons

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