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options

Autumn 2002

A New Generation of Scientists

25 Years YSSP Young Scientists Summer Program

Options Autumn 2002

Contents

Options magazine features the activities of the International Institute for Applied Systems Analysis (IIASA), located in Laxenburg, Austria. IIASA is an interdisciplinary, nongovernmental research institution sponsored by a consortium of National Member Organizations in Asia, Europe, and North America. The Institute's research focuses on sustainability and the human dimensions of global change. IIASA's studies are international and interdisciplinary, providing timely and relevant insights for the scientific community, policymakers, and the public.

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The year 2002 is remarkable for IIASA in that it marks both the Institute's 30-year anniversary and the 25-year anniversary of the Young Scientists Summer Program (YSSP). This issue of *Options* is entirely devoted to the YSSP. In this way it differs from other issues, which usually report on the research findings of IIASA scientists. IIASA is a research institute with no formal educational programs, with one exception: the YSSP.

In the past 25 years, over 1,000 young researchers from 45 countries have spent three summer months at IIASA. During their stay, the participants work with their project supervisors, with scientists in other IIASA projects, and with one another. They share their ideas through informal discussions and more formal presentations of their research, such as at the midsummer workshop. As is echoed throughout this issue of *Options*, these experiences teach the participants to "think big." Above all, the YSSP enables young people to work together in a friendly environment that is ideal for thinking and for developing their ideas.

This summer, IIASA celebrated the first 25 years of the YSSP with the return of a number of alumni, who gave lectures and discussed the past and future of the program. Their memories and insights are among those included here. The topics covered in this issue of *Options* range from descriptions of the program's origins to visions of the YSSP of the future. The articles also provide insight into the candidate selection process, how the program serves to strengthen the relationship between IIASA and its National Member Organizations, and how participation can be a learning process for participants and project supervisors.

Particularly interesting are the responses to a survey of YSSP alumni regarding the ways the program has affected their lives and careers, and how the program might be changed to address changing global research needs. Many of the alumni pointed to the need for a shift in emphasis to issues of sustainable development, and thus to North–South collaboration. This is in line with IIASA's long-term plan, as decided by the IIASA Council in late 1999. In a move in this direction, China joined IIASA in early 2002, and discussions concerning possible membership for several developing countries—including India, Pakistan, Egypt, and Chile—are ongoing.

During its first 30 years, IIASA has evolved from its past focus on East–West issues to become a research institute dealing with matters of global change. And for the past quarter-century, the YSSP—with its international, hands-on, interdisciplinary approach—has been helping launch the careers of young scientists uniquely equipped for the challenges of global change research. With the increasing membership of developing countries, our "YSSPers" will be even better equipped in the years ahead.

Leen Hordijk
Director of IIASA

The YSSP: 25 Years at IIASA

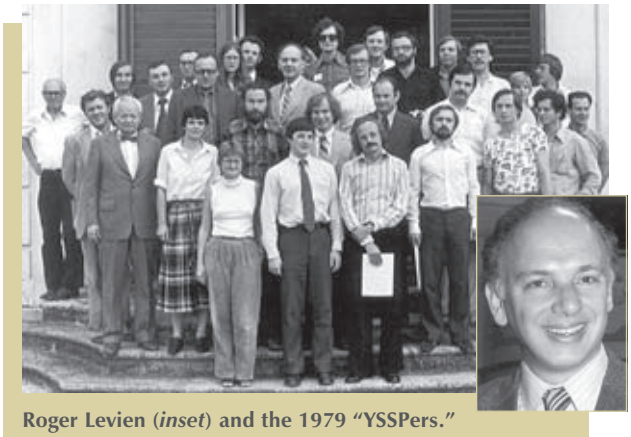
Since 1977, IIASA's Young Scientists Summer Program has provided a unique opportunity for young scientists

The Origins of the YSSP

Roger E. Levien
Director of IIASA, 1975–1981

The Young Scientists Summer Program had its origin in two things: the Institute's desire to develop a new generation of scientists who would carry forward the international, interdisciplinary, and applied approach that we were developing at IIASA, and my experience in a similar program at the RAND Corporation.

One of the principal problems the Institute faced in its early days was the scarcity of researchers with practical experience in "systems analysis" of the kind that IIASA was trying to apply. Although the United States was viewed as the source of systems analysis knowledge and experience, there were in fact only a small number of American systems analysis practitioners, and most of them worked in industry and think tanks. There were even fewer experienced systems analysts in other countries. Only a handful of scientists in the world had international systems analysis experience—principally in military issues. Thus, the Institute recruited mature scientists with strong disciplinary research backgrounds, formed them into interdisciplinary and international teams, and applied them to policy-relevant problems. It hoped that the crucible of experience would transmute good scientists into good systems analysts. The results were mixed: it is difficult for experienced scientists, nurtured on the research paradigms of their fields, to develop new approaches in mid-career. The Institute needed to foster an international cadre of young researchers who would bring vigor to the developing discipline of international and applied systems analysis.



Roger Levien (*inset*) and the 1979 "YSSPers."

This problem confronted me when I became the director of IIASA in the fall of 1975. But I brought to it my own experience as a young scientist. When I had finished my undergraduate program in engineering, I sought a summer internship to gain experience (and income) before starting a master's program at the Massachusetts Institute of Technology. The chairman of the Engineering Department at my college recommended me to the RAND Corporation in Santa Monica, California (where systems analysis was developed; it was the original "think tank"). Fortuitously, RAND was at that moment considering initiating a graduate student program and decided that I would be a suitable test case. I spent three months at RAND, absorbing its systems approach, interdisciplinary style, and focus on real policy problems. The experience changed my career—and life—plans. I resolved to prepare myself to become a RAND researcher and switched to a PhD program at Harvard University. After returning for two more summers to a full-fledged summer graduate student program, I joined RAND full-time. There, I worked on a wide range of public policy problems, engaging graduate students whenever possible. Then, in the fall of 1974, I was invited to spend a sabbatical year at IIASA. When, after a year, I was appointed director of IIASA, it seemed to me that a similar program could help attract young scientists from many countries to the field of international and applied systems analysis—and, eventually, to IIASA or to organizations in its research network.

The Graduate Students Summer Program, as it was then known, began in the summer of 1977 with 13 participants from five countries. Office space—cubicles—was found for the students in the Kaisergang, the passageway that links the Schloss with the Park Wing. The students worked with supervisors from almost all of IIASA's research projects. The summer was a success for both the program participants and the Institute. The students found the experience enriching and the program to have great potential, despite some start-up problems. They expressed the hope that it would continue. The supervisors found the students to be bright, enthusiastic, and productive.

The program was repeated in 1978; this time participants were required to find their own financial support. Even with that requirement, 13 students from eight countries participated. To strengthen the formal educational component of the program, the students attended a series of lectures on systems analysis, organized by Ed Quade, who headed the State of the Art of Systems Analysis Project. As a sign of its success and spreading reputation, the program grew substantially in 1979, bringing together 24 young scientists from 11 countries.

With three years of positive experience and Council support, I decided to formalize and publicize the program more widely. My assistant for scientific recruitment, Gennady Potemkin, took on the task. He pointed out that many of the previous participants were not formally "graduate students," but rather "young scientists." So we agreed to modify the program's name. Gennady soon returned with a draft brochure whose cover carried the new name: "Summer Program for Young Scientists." I took one look and told him that it had to be changed. The acronym—SPYS—simply would not do for an institute dedicated to breaking down Cold War barriers! So it became the "Young Scientists Summer Program." And YSSP it has remained.

When I left IIASA at the end of 1981, I was delighted that the YSSP had become an integral and successful part of IIASA's activities. Everyone looked forward to the arrival of the young scientists each summer because not only did they come to learn, but they also brought their intelligence, energy, and enthusiasm, raising our spirits and renewing our commitment to the Institute's goals. My original objective of developing a new cadre of systems analysts had been well served. But I came to realize that perhaps the most important function of the YSSP was to bring together scientists from many countries, enabling them to build bridges across political boundaries at the start of their careers that would serve them well in the years ahead. I hope and expect that the paths across those bridges have been well trodden in the 25 years since the first graduate students spent the summer at IIASA.

The Early Years: Overcoming Barriers

Tibor Vasko
Former Dean of the YSSP, 1981–1986

This year IIASA celebrates the 25th anniversary of the launch of the YSSP. For those who are considering joining the program to pursue your scientific interests and are looking for a friendly country, beautiful countryside, and good food and wine, you will be coming to the right place.

This year IIASA also celebrates another anniversary: the Institute was established 30 years ago, after many years of preparation and efforts to build bridges between East and West. I had the pleasure of being there, representing the Czechoslovak Socialist Republic. Today there is no Czechoslovakia and no Socialist Republic, but there is still IIASA, which proves the robustness and resilience of the idea of creating an international institute for cooperation and mutual benefit.

Tibor Vasko with the 1982 "YSSPers."

IIASA may have been based on friendship and cooperation, but it was the 1967 Arab–Israeli war that led to the decision to create it. In that year, many heads of state were at the United Nations General Assembly in New York to discuss the war, including Soviet Premier Alexei Kosygin. The Americans wanted to make use of the fact that Premier Kosygin was on US soil, but he was there as a guest of the UN, and not the US government. For reasons of protocol, therefore, US President Lyndon Johnson could not meet him in New York, and Kosygin could not visit Johnson in Washington. The diplomats were very inventive, however, and proposed that a meeting take place halfway, in Glassboro, New Jersey. At that meeting, the two leaders agreed that the world was facing new problems and proposed that a special institute be created to address them.

McGeorge Bundy and Soviet Academician Jermen Gvishiani were given the task of pursuing the matter and bringing it to formal conclusion, but it was another five years before the Institute was established. In 1972 the negotiations moved to London, hosted by the Royal Society. The negotiators were to select a location for the new institute, decide on a suitable name, and find the means to finance it. Everything involved a compromise—even the name. The Americans wanted

an institute that would work on practical problems, applying known theories and experience, and using a largely empirical approach. The Russians wanted an institute that would undertake scientific analyses of problems and generate widely applicable methodological rules. After long discussions, it was decided that the name, the International Institute for Applied Systems Analysis, would encompass both interests: "applied" was closer to the American view, and "systems analysis" satisfied the Russians.

Once the decision was made to locate the Institute in Laxenburg, the government of Austria, including Chancellor Bruno Kreisky and Foreign Minister (later President) Rudolf Kirchschläger, and the wider Austrian community were very supportive. The work began immediately, in an apartment in Vienna borrowed from the International Atomic Energy Agency until June 1973, when the first eight rooms in Schloss Laxenburg became available. Many observers were skeptical about the Institute's future. They warned that it would take years for an international institute to start to produce results. I was therefore delighted when the first research report appeared in the summer of 1973, followed a few weeks later by a paper by George Dantzig. These were the first signs that IIASA was alive and well.

After 25 years the YSSP continues to be a great success, and its importance is growing. I am sure I speak for all IIASA staff when I say that we have all became so used to the program that for us the real summer only begins when we are flooded with young people. The program has always been international and interdisciplinary, and is responding to recent challenges by becoming multicultural.

For almost two-thirds of its existence, IIASA operated in a Cold War environment. The iron curtain may no longer exist, but many other barriers remain between peoples, nations, and religions. There is still a need for IIASA's unique ability to tunnel useful ideas through barriers of whatever kind. I think the continuing challenge to researchers of any age is to identify and spread new knowledge, but even more, to spread wisdom. In this venture I would like to wish all YSSP participants, both past and future, the greatest success.

Peter Aven (USSR, YSSP '77) worked with IIASA's ETI Project for over ten years. From 1991 to 1992 he was the minister of foreign relations of the Russian Federation. He is currently president of the Russian Alpha Bank.
"I participated in the first experimental YSSP program in 1975. I also was there for the second time in 1977.…[F]or all Russians (there were four of us in both years), this time at IIASA was extremely interesting and helpful. Especially for Russians at that time it was not just IIASA but 'the West'.…[The] YSSP gave me a lot of information about the proper organization of scientific work. And it also gave me serious stimulus to come back, which I did in 15 years' time."

IIASA's National Member Organizations

IIASA's 17 National Member Organizations (NMOs) provide valuable support for the YSSP, both by promoting the program and offering scholarships to enable predoctoral students to participate. The NMOs support students registered at universities in their countries, but increasingly are offering support to foreign nationals, specifically those from countries with economies in transition or developing countries. The following articles present the views of representatives of two NMOs—Sweden and the United States—highlighting the importance of the program at the individual, national, and international levels.

Supporting Young Scientists and the YSSP: A View from Sweden

Berit Örnevall
Senior International Officer, The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS), and Swedish NMO Secretary

During my first visit to IIASA in 1977, my impressions were of the magnificent Schloss Laxenburg, the international atmosphere, the sounds of different languages in the corridors, and, most of all, the almost tangible excitement of the ongoing high-level research. All these things led me to think that this was something that our young students should be able to experience during their years of long hard work to reach their scientific goals. Thus, when IIASA launched the YSSP, I was happy that the Swedish NMO took the opportunity to send some young PhD students to Laxenburg. Some of those first Swedish YSSP participants are now successful scientists, working as university professors and research leaders, or are directors of institutes and private companies in Sweden and elsewhere. Many of them have declared that IIASA was their portal to international collaboration.

Sweden has supported the YSSP for more than 20 years, and has extended its funding to enable more PhD students to join IIASA's research teams and to make valuable contacts with other young scientists

from all over the world. Every year we fund five or six participants from Swedish universities who have applied to the program and have been selected by IIASA. Our rule is that applicants must be registered at a Swedish university, but they need not necessarily be Swedish citizens. We have also given financial support to students from a number of East European countries that cannot find funding for their own young scientists. This support has allowed us to obtain international feedback and has led to the development of many valuable networks for Swedish researchers.

How can Sweden help to make IIASA and its YSSP better known and to attract more young PhD students? Over the years, we have found that professors or supervisors who have been in contact with IIASA are able to recruit interested and competent candidates among their own students. It is also clear that young people with international experience or foreign backgrounds are more eager to continue to work abroad. We therefore see it as our task to broaden this group and to convince other students to make use of this very special opportunity to spend a summer at an exciting research institute together with 50–60 other young people of different nationalities.

YSSP participants sponsored by Sweden in 2000, with YSSP coordinator Margaret Traber (*back row, second from right*). Missing from photo: Adam Mantaye.

As one way to "market" the program, post-YSSP seminars are held each year at a university in Sweden, where former participants describe their scientific projects and experiences during the summer. Especially tempting for the audience are the accounts of the many social activities, such as hiking in the mountains, exploring Vienna, and visiting cities such as Budapest and Prague. The highlight is the annual midsummer party—incorporating many of our traditions such as dancing, flowers, herrings, and "snaps"—which is arranged by the Nordic students. These seminars enable us to establish new contacts between IIASA and Swedish universities.

As another way to ensure that we keep in touch with former YSSP participants and other IIASA alumni, we invite IIASA project leaders and alumni to present their work at annual seminars. The past 25 years have resulted in a long list of alumni for us to invite.

Why does Sweden put so much effort into promoting the YSSP? It is one of IIASA's most important and popular programs, and provides science with new, upcoming young talent. For me personally, this is and has always been my favorite job. It has often involved a great deal of hard work, but I have also had a lot of fun and pleasure in return. I have enjoyed meeting the many clever and always very positive young people, and have established good contacts with many of them. One of my best memories is of the words of one of those students: "the Swedish scholarship gave me a real chance and it changed and improved my whole life."

IIASA can certainly be proud of this successful program.

One American's Reflections on the YSSP

Alan McDonald
Former Executive Director, US Committee for IIASA, and US NMO Secretary

IIASA's first director, Howard Raiffa, faced the challenges of starting up the new institute, but the subsequent task of the second director, Roger Levien, was perhaps even more daunting—to turn a successful start-up into a sustainable institution. To meet this challenge, in the late 1970s Levien initiated two new programs, the YSSP and the International Cooperation in Systems Analysis Research program. ICSAR, which aimed at attracting corporate funding for industry-oriented research at IIASA, did not survive.

Fortunately, the YSSP not only survived but expanded and flourished, even while IIASA's overall budget and staff contracted during the 1980s. Indeed, the YSSP proved the easiest of the US NMO's many fund-raising duties. In particular, the government was much quicker to write a check so that American students could experience IIASA's research first-hand than it was to pay for that research in the first place. Thus for the US NMO, the YSSP was (and still is) very much a win–win proposition. In addition to its direct educational and research benefits, the YSSP contributes to IIASA's long-term health in at least three ways.

Alan McDonald (*right*) with former IIASA Director Peter de Janosí.

First and most fundamental is the program's contribution to recruiting. Recruiting has always been the director's most important task. It is time-consuming, never ending,

and difficult. Convincing established professionals to uproot their families and careers and move everything to Vienna can be a challenge, particularly with the increase in two-career couples. Enticing students into the YSSP, which is essentially a "three-month free trial" of work at IIASA at a time when they are relatively unconstrained by spouses, children, mortgages, and community and professional commitments, is much easier. Once they are familiar with IIASA and have personal and professional connections, they are easier to recruit at subsequent stages in their careers. There is also an indirect recruiting benefit from YSSP alumni. By augmenting IIASA's overall network of alumni, the YSSP alumni broaden its reach, and the alumni network is an essential part of any director's recruiting effort.

Second, YSSP alumni are also a critical resource for IIASA's NMOs. In retrospect, the creators of IIASA—the relatively small group of remarkable individuals who negotiated IIASA's six-year birth—may have devoted too little attention to the NMOs. Each of the creators was fulfilling the functions he (and they were all men) would later leave to his NMO. Each served as a two-way link, simultaneously doing three things: (1) promoting national interests to his IIASA colleagues, (2) negotiating with them compromises with mutual benefits, and (3) promoting IIASA to national constituencies back home. Being present from the beginning, their comprehensive appreciation of IIASA from all perspectives was unique. The same comprehensive appreciation is just as valuable today, but it is hard to recreate generation after generation. Still, the challenge is not unique to IIASA. Just as large corporations move talented people around to build understanding and relationships that will ultimately help to coordinate the overall company, "corporate IIASA" (including both NMOs and the operation in Laxenburg) is well served by alumni who actively participate in their NMOs. The view from Laxenburg is always different from the views from Stockholm, Cambridge, Moscow, Beijing, or even Vienna. People who understand more than just one view are valuable. To the extent that YSSP colleagues are active in the different NMOs, they also help to strengthen understanding and coordination directly among NMOs. It all helps "corporate IIASA" to run more smoothly and to be more effective.

Finally, the YSSP can play a role in building and expanding IIASA's constituency. The creation of IIASA in the midst of the Cold War, the arms race, Vietnam, the Six-Day War in the Middle East, and the Soviet suppression of the Prague Spring was remarkable—a truly admirable accomplishment. But now it is ancient history. For IIASA to be useful in advancing research and in promoting joint international policy progress through joint analysis, it must be responsive to changing policy interests in the NMO countries, to changing research approaches and data, and to the changing roster of what C.S. "Buzz" Holling, IIASA's third director, called "influentials"—the movers and shakers in governments, business, and academe. The more of those influentials that are YSSP alumni, the better off IIASA will be, and—in my opinion—the better off the world will be.

Stefan Anderberg (Sweden, YSSP '85) returned to IIASA as a staff member from 1989 to 1996, and was often a YSSP supervisor. He is now associate professor at the University of Copenhagen, Denmark.

"I had a fantastic, and I think rather unique, YSSP experience, which has had an enormous influence on my career. The YSSP opened up new worlds of research, research questions, perspectives, contacts, and opportunities."

Plamena Gaydarova (Bulgaria, YSSP '96) is now working in a Swedish–Bulgarian project on integrated environmental diagnosis and assessment of ecological systems at risk in Bulgaria.

"I have been very grateful for what I learned from the holistic thinking that characterized the IIASA research environment."

Jesse Ausubel (USA, YSSP '79) is director of the Program for the Human Environment at the Rockefeller University, New York. From 1979 to 1981 he led IIASA's Climate Task within the Resources and Environment Program.

"My experiences at IIASA profoundly influenced my career in every way: the problems I work on, the ways I approach the problems in a technical sense, the shift from a uni-national to a multi-national perspective, the networks of people with whom I work, and my belief in the contribution science can make to conflict resolution."

YSSP Projects: Preparing for Success

Ulf Dieckmann
YSSP Supervisor

Putting together a successful YSSP project is often akin to preparing a sophisticated dinner menu. Both benefit from careful planning, a good match of available skills and actual requirements, determination and diligence, some ingenuity, and an inspired vision of the final product.

YSSP projects are at the same time wonderful opportunities and formidable challenges. Like any piece of innovative research, they can be highly unpredictable. A promising plan, even if well conceived at the outset, might simply crumble in the face of a few unexpected findings. Or, what may have initially seemed a solid and unequivocal research pathway may open up surprising vistas toward even more exciting destinations. But the truly taxing aspect of these projects is their length. Three months is not an awfully long time in which to pack the choice of a mutually attractive subject, training in some specific skills or techniques, the unfolding of the required research, and the production of some tangible output—as well as participating in the unique social environment for which IIASA's summer program is justifiably famous.

Yet it works, often amazingly well. One reason, I think, is that some critical self-selection among the participants works to the advantage of the summer program. The young scientists who come to IIASA are keenly interested in going abroad, engaging in international collaboration, and working and living together with other students and scientists from around the world. Many of them bring a high degree of commitment to the program and a combination of salient talents. A second reason for its success lies in the preparation. When scientists at IIASA and candidates for the YSSP can orchestrate a research agenda through a process of mutual information and discussion, and if the young scientists then familiarize themselves with the necessary background before they arrive, most of the summer can be spent focusing on the actual work.

Ulf Dieckmann (*left*) with YSSP Vice-Dean Zig Klimont.

Perhaps the most important reason for the continuing success of the YSSP stems from the synergies it helps to create. Many participants join the program equipped with scientific questions, skills, and outlooks that are healthily different from the platform IIASA has available in-house. Combining these components then has the potential to create a whole that is more than the sum of its parts. Here, the brevity of summer projects is actually key: whereas conventional PhD projects can be (and often are) built solely around the scientific enthusiasms of their supervisors, many fine YSSP projects regularly arise from a more cooperative approach, in which two only partially overlapping sets of expertise are fruitfully pooled. In the past few years, such fortunate constellations have enabled, for instance, our Adaptive Dynamics Network Project to expand its expertise in areas as diverse as modeling fish stocks and fisheries, investigating the ecology and evolution of structured populations, and studying plant–herbivore interactions or speciation by sexual selection, to mention just a few prominent examples. Longer-term affiliations of former YSSP participants with IIASA then ensure that the most thriving of these collaborations can be continued.

Returning to the dinner-menu analogy, it is clear that, as usual, the proof of the pudding is in the eating. For those involved in the YSSP, both participants and supervisors, this involves not only expanded horizons, but also happy memories of the collaborative process itself. First and foremost, this means sharing the results of fruitful summer projects with the wider scientific community in the form of publications. This step is not only important for IIASA as an institution; it is also becoming increasingly vital for the participating young scientists. At least in science, PhD theses compiled from articles published in international peer-reviewed journals are becoming the worldwide standard (sweeping away conservative rules that oblige candidates to produce little-read monographs in their national language). In support of this trend, IIASA's summer program has already led to many a good PhD chapter, and has thus allowed young scientists to visibly demonstrate the skills and experience they have gained in the art of international scientific collaboration.

A Recipe for Duck Soup

Joanne Linnerooth-Bayer
Dean of the YSSP

A poster for the Marx brothers' satirical film Duck Soup *shows the four Marx brothers swimming in a cooking pot over a fire. Why the title* Duck Soup*? It is claimed that Groucho provided the following recipe: "Take two turkeys, one goose, four cabbages, but no duck, and mix them together. After one taste, you'll duck soup the rest of your life."* [1]

Roger Levien, IIASA's second director and founder of the YSSP, provided the basic recipe for the YSSP's success: take a few young scientists from IIASA's member countries, a few from outside, be sure they represent about half as many disciplines as participants, and integrate them into IIASA's research projects.

And what did Groucho mean by "duck soup?" While English is the common language of the YSSP, some participants may not know that "to duck" is slang for "to avoid." Yet, even though the participants may not be familiar with English slang, let alone each of the highly specialized jargons of the twenty-plus disciplines represented every summer at IIASA, interdisciplinary and international research can and does go on. How does the YSSP do it? Let me give an example from the Risk, Modeling and Society (RMS) Project.

RMS is carrying out an integrated assessment of flood risks on the Upper Tisza River, which flows from Ukraine to Romania through one of the poorest areas of Hungary. This is also one of the most flood-prone areas in Europe. Together with Swedish and Hungarian collaborators, the RMS team is building a flood-catastrophe model of the area and is using this model to aid a stakeholder process to reach a consensus on policies for reducing flood losses and sharing them through a country-wide insurance program. The model is informed by interviews with stakeholders and a survey of the Hungarian public. This is a typical IIASA project—thoroughly international, interdisciplinary and aimed at an integrated assessment.

Enter the young scientists—not on the film set as in the fictitious Freedonia where the Marx brothers found themselves, but on the site of the historic Habsburg palace in Laxenburg. Since the beginning of the Tisza River project in 2000, RMS has hosted 18 "YSSPers" from nine countries. Each has come with his or her disciplinary baggage; yet, by learning from each other and the RMS staff, many have turned their summer into a genuinely interdisciplinary experience. They have also greatly contributed to the Tisza River project. I will illustrate with some of RMS's cast of characters.

Arriving in 2000, two Swedish participants, Karin and Lisa, with backgrounds in systems sciences from Stockholm University, set out to build an interface for the IIASA model such that it could be used in the second round of interviews with Hungarian stakeholders. This task clearly required expertise beyond modeling. To learn about the intricacies of the Hungarian policy terrain, Karin and Lisa made good use of the expertise of Zoltán, who had been working on the Tisza River project in Budapest. Coming from a sociology background, Zoltán also stretched his discipline. His task was to analyze the Hungarian survey data, but as he learned more about theories developed by cultural anthropologists, he tested whether the Hungarian responses reflected economic interests or were related to socially determined worldviews.

The soup became richer with the addition of Muneta, our Japanese participant from Kyoto University, who applied stochastic optimization techniques to two key Tisza issues: how much to invest in flood mitigation and how to share fairly the residual costs among generations. This was a difficult exercise in systems thinking (given rare catastrophic events) and distributive justice—an unusual assignment for a Japanese economics student. Muneta spent a great deal of time discussing his approach with Krzystof, a Polish economics student with experience in financial institutions, who worked out a strategy for financing large, probabilistic losses to public infrastructure due to floods. This strategy made use of novel hedging instruments, such as catastrophe bonds—a hot topic in financial circles.

Just as in the classic Marx brothers' film, where the plot thickened as the Freedonian president, Rufus T. Firefly, ended up at war with Sylvania, the Tisza River project became more complex with the widely publicized cyanide contamination from a gold mine in (yes) Transylvania. Discovering that cyanide decomposes into a number of by-products whose risks are little known, Felicia from the Heinz School of Public Policy at Carnegie-Mellon University became concerned that the

Joanne Linnerooth-Bayer

Hungarian public was uninformed about possible new risks. Keeping in mind that the tourist industry in the beautiful Tisza area could be further damaged by additional "risk scares," she began an inquiry into the feasibility and ethics of communicating uncertain scientific information. This required interviews with key Hungarian scientists and policymakers, a task that required a good understanding of both chemistry and politics—and she even learned some Hungarian.

Help in involving the stakeholders in the Hungarian policy process came from the Netherlands and, again, Sweden. Building on her experience with stakeholder involvement in climate policy, a Dutch student of environmental sciences, Marleen, developed ideas on how best to incorporate stakeholder participation into an integrated assessment, a task foreseen as the next step in the IIASA Tisza River study. Another Swedish participant, Ari, used his skills in decision analysis to develop an interview protocol for addressing the question of whether to build some Tisza River levees (dikes) higher or take them down altogether. He left behind his computer screen and traveled to Budapest to test his protocol on a Hungarian policymaker. This foray into the real world was an eye-opener, and Ari was astounded to find that the policymaker had little information on the potential consequences of these hotly debated strategies.

Other RMS participants applied the methodologies and insights from the Hungarian study and from related RMS research to extreme flood events in Europe and Africa—Elena to the Tundja River in Bulgaria, Adam to the Nile in Sudan, and Jürgen to the Rhine in Germany.

These interactions go far beyond what a scholar of interdisciplinary research, Margaret Boden,[2] refers to as *shared interdisciplinarity,* which only requires participating disciplines to acknowledge that another discipline may better address discrete aspects of the central problem. Inquiries and outcomes are communicated among groups, but there is no day-to-day cooperation. Clearly, the "YSSPers" do not need to come to Laxenburg to engage in this style of interdisciplinary research.

Cooperative interdisciplinarity, on the other hand, requires that researchers from different disciplines and possessing complementary skills actively cooperate to reach a common goal. This style is typical of projects at IIASA, and the "YSSPers" often participate in applying their skills to further project goals. This research style, however, does not lead explicitly to cross-disciplinary learning, and Boden considers it to be no more than an intellectually tolerant form of multidisciplinarity. The only genuinely interdisciplinary research enterprise, in Boden's view, is *integrated interdisciplinarity,* which requires the cross-pollination of concepts and insights from one discipline to another, enhancing all of the participating disciplines.

Mina Ryoke (Japan, YSSP '96) returned to IIASA as a guest researcher in 1999, and joined the Risk, Modeling and Society (RMS) project in May 2001. She is also a research associate in the School of Knowledge Science at the Japan Advanced Institute of Science and Technology (JAIST), Ishikawa, Japan. *"One of the reasons why I joined the YSSP was to apply my developing methodologies to address real problems. As a result of my work at IIASA during that summer I wrote several papers and have made presentations at various international conferences and meetings in Japan."*

The YSSP strives for cooperation among disciplines and also genuine cross-disciplinary learning. The Tisza River project was a catalyst for both. While many of the young participants cooperated in contributing to the development of the model and the project generally, some went beyond this multidisciplinary effort. Karin and Lisa, for example, learned from Zoltán about incorporating stakeholder views into a broad integrated assessment, and Muneta learned from Krzystof about risk-swapping strategies for achieving equity in flood losses. Likewise, Zoltán learned about modeling from the Swedish participants, and Krzystof learned about systems thinking from Muneta. This integrated interdisciplinarity, Boden argues, demands face-to-face interaction.

From June through August each year this is what Schloss Laxenburg is about, and a lot of duck soups are cooking throughout this palatial residence. The YSSP would be incomplete, however, without the grand soup-tasting, recipe-swapping event—the YSSP midsummer workshop. Here, the participants polish their presentation skills with just ten minutes to present their research, followed by valuable comments and feedback from their YSSP colleagues and IIASA staff.

Those who have seen the film *Duck Soup* will know that it is filled with delightfully funny moments, gags, and just plain silliness. And so goes the YSSP. What else could be said of that dark night when the "YSSPers" found an entrance to the Vienna sewer system—inspired by yet another film classic?

Duck Soup did not receive any Academy Award nominations; perhaps it was a film before its time. This is fortunately not the case with the YSSP. The participants compete each summer for the Peccei and Mikhalevich Scholarships, which allow them to spend a second summer in this grand palace as part of yet another great duck soup. And the results are impressive.

> Take two Swedish system scientists, add a Hungarian sociologist, a US policy analyst, a Japanese economist, a Polish financial analyst, a Dutch environmental expert, and a Swedish decision analyst. Sprinkle in a Bulgarian hydrologist, a German sociologist, and a Sudanese economist. Simmer until fully integrated…

[1]Dirks, T., 2002, Review of *Duck Soup*, www.filmsite.org/duck.html

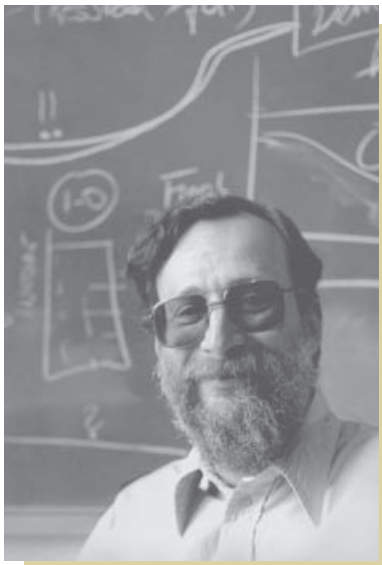
[2]Boden, M.A., 1999, What is interdisciplinarity?, in R. Cunningham, ed., *Interdisciplinarity and the Organisation of Knowledge in Europe,* European Communities Press, Luxembourg.

The Magic of Research

Warren Sanderson
YSSP Supervisor

Researchers often experience emotions that are hard to explain to others. There are wonderful "eureka" moments, but even these can sometimes take on a strange form. One day, you discover that several years of work on subject A has led you to a new, exciting, and unanticipated finding in subject B. Instantly, your life changes and you become a subject B researcher. At that moment, you give up all pretenses that your studies are totally under your own control. You are doing your research, and in a sense your research is also doing you, guiding you to intellectual places you never dreamed of going before. Most "eureka" moments are not serendipitous, but they are nevertheless unpredictable. It is possible to work on something for years, only to have all the pieces magically fall into place within a week. Suddenly, everything that you have been working on seems crystal clear. You only wonder why it took you so long to see something so obvious.

There is no good way to communicate how it feels at one of those frightful "anti-eureka" moments, even though researchers often experience them. You are sure that you and your collaborators have discovered something new and important. You tell your friends and talk the night away, thinking through all the implications of the finding. Then, in the morning, after reviewing your notes in great detail, you find that a decimal point has disappeared somewhere, transforming a 0.2 into a 2, thus generating your—now clearly misplaced—jubilation. The feeling of loss is almost overwhelming, especially in contrast with the previous day's elation. It is also difficult to explain to people what it feels like to have your research go backward. You work on something very hard for two weeks and you learn that something that you were sure was right is actually wrong, and that you know less than you thought you knew two weeks earlier.



Warren Sanderson

The students who participate in the YSSP are just at the beginning of their research lives.

They come to IIASA each summer in the hope that the staff and their fellow students will help them experience some of the magic of research. And they have come to the right place.

IIASA itself has a magical quality. Its main building, known simply as "the Schloss," was originally constructed as an informal summer palace for Empress Maria Theresa and her court. It is rich in history. In 1916, uninvited emissaries were captured on the winding staircase near what are now the offices of the Computer Services department, on a mission to persuade Emperor Franz Josef of a plan that would have changed the course of the First World War. Their capture meant that Franz Josef never heard their proposal, and the rest is history. Behind the Schloss is a magnificent park that was once a hunting ground for the aristocracy, but now is enjoyed by everyone.

Perhaps because I usually return to IIASA in the summertime, just as the students are arriving, I can see the magic of IIASA afresh every year, more or less the way they must see it for the first time. One of my greatest thrills each summer is meeting some of the most talented young people in the world who are interested in the same kinds of research as I am. I have devoted my professional life to the study of economics and demography. Having contact with these bright young people every summer is like a person who has a passion for chocolate receiving a three-month supply of the world's best chocolate every year. Such pleasure is addictive.

The YSSP participants have been and continue to be amazing people in all sorts of ways. They are bright, talented, and they come to work. There is no generic "YSSPer." I have supervised all kinds of students, ranging from a person writing her undergraduate thesis to someone who has been a professor for a number of years. Each one is unique. The only common thread is that they have to write a high-quality research paper by the end of our three months together.

When I first thought about writing this article, I thought I would describe some of the most interesting experiences that I have had with the young scientists I have supervised. But the more I thought about it, the more I realized that this would give the wrong impression. The real joy in being a YSSP supervisor is not in the extraordinary, but in the ordinary day-to-day interactions with these talented people. I have often sat in a room where Franz Josef perhaps discussed affairs of state, with the door open to the park, talking with amazing young people about fascinating research. Sometimes we talked about why their work seemed to be going backward. Sometimes I helped when they were uncomfortable with the fact that their work was leading them in new directions. Sometimes I helped them understand that those frightening "anti-eureka" moments did not signal the end of their academic careers. And then there have been those wonderful "eureka" days, when the results are clear and everything makes sense. Such days are exciting not only for the students, but for me as well, because I learn from them too. To me, the joy of being a YSSP supervisor is not derived from what I learn from my young colleagues, although I have learned quite a bit. The joy comes from helping them learn to love that strange and magical experience called "research" just as much as I do.

Thomas Büttner (GDR, YSSP '86) was a researcher in IIASA's Population Project from 1988 to 1991. He is now a demographer at the United Nations Population Division in New York.

"I appreciated the creative atmosphere at IIASA, where people left their office doors open so one could easily talk to almost everybody.…IIASA provided the 'YSSPers' with a stimulating and very supportive working environment, and it was there that I gained much experience in the quantitative and empirical aspects of demography. The experiences gained and skill acquired during my times at IIASA have been very important for what I am doing now."

YSSP Midsummer Workshop 2002

This has been a significant year for IIASA. While celebrating its 30th anniversary and 25 years of the YSSP, the Institute has also welcomed a new director and China as its most recent member country. The YSSP stands out as one of IIASA's most successful programs, yet how can IIASA build on that success to ensure that the program continues to meet the needs of young scientists in the future?

For 25 years the YSSP has been bringing together groups of enthusiastic young scientists from many disciplines and cultures to work with and learn from each other. This year was no exception, with 45 participants representing 18 nationalities, including three students from China. As in previous years, the participants presented their research at the annual midsummer workshop, after which their fellow participants and IIASA staff provided feedback in the form of pertinent questions and peer assessments of their presentations.

To mark the 25th birthday of the YSSP, two alumni returned to IIASA to give plenary talks at the workshop. They highlighted the very different scales at which a systems approach can be used to address complex problems. First, Semida Silveira (Brazil, YSSP '88) focused on the ways in which IIASA could apply its analytical tools and knowledge of environmental systems to guide new global strategies for sustainable development. She encouraged the YSSP, and IIASA, to become truly global by focusing more on the developing world. Tony Patt (USA, YSSP '97) then described his ongoing work in Zimbabwe assessing how local subsistence farmers can make use of probabilistic climate forecasts to guide their day-to-day decisions on whether and when to plant food crops (see boxes).

Seasonal Rainfall Forecasting in Zimbabwe

Tony Patt (USA, YSSP '97)
Potsdam Institute for Climate Impact Research, Germany

Sustainable development requires the application of knowledge by decision makers at a number of levels, extending from the negotiators of international treaties, to national and regional policy-makers, and ultimately to farmers in the field. Indeed, useful science often results from co-production: the cooperation between decision makers and scientists combining their knowledge and generating salient, credible, and legitimate information that can be applied in practice.

In my research I am both examining and undertaking this process, focusing on the decisions faced by subsistence farmers in Zimbabwe and their use of seasonal climate forecasts. First, I tested the farmers' ability to work with probabilistic information, since this is a prerequisite for productive interactions with climate forecasters. Having concluded that farmers can indeed work with probabilistic information, I am now in the middle of a five-year project to bring farmers and forecasters together. Through local community workshops, the farmers have a unique opportunity to learn a little of the science behind the weather patterns that influence their lives and to combine it with their local knowledge of weather, crops, and economic trade-offs.

In addition, some YSSP alumni and former IIASA staff members returned to Laxenburg to attend the midsummer workshop. In a special panel session, they were set the tasks of assessing the program in the light of their own experiences in their subsequent careers and presenting their vision of how it could evolve over the next 25 years. Their discussions are summarized in the following paragraphs.

The YSSP in the future

The alumni were unanimous—the YSSP is not simply a summer program, but a valuable work experience in which young scientists from different disciplines and cultures can exchange ideas. For many participants the summer at IIASA is an inspiring time. From the beginning the YSSP has been one of IIASA's best and most successful programs, and there is no reason to change it fundamentally. In other words, *if it's not broken, don't fix it.*

Yet the world has changed in the past 25 years, as has our awareness of the scale of the challenges that need to be addressed. Whereas in the past IIASA's mission was to help bridge the East–West divide, in the future the emphasis should be on North–South research collaboration to address the problems of sustainable development. Through the YSSP, IIASA could make a valuable contribution to building the capacity for systems analysis in the South. Special efforts should therefore be made to promote the program among young scientists from less developed countries and economies in transition, regardless of whether they are IIASA members, to encourage them to participate in the YSSP.

Systems Analysis for Development: A New Direction for IIASA?

Semida Silveira (Brazil, YSSP '88)
Swedish Energy Agency, Eskilstuna, Sweden

Young scientists bring to IIASA fresh ideas, reflecting the changing attitudes and demands of a new generation. How should IIASA position itself in response to these demands, and how could its work evolve in the future?

As a YSSP participant in 1988, I worked in the project on international rivers, one of the few IIASA projects dealing with developing countries at that time. This apparent lack of interest in development issues surprised me—IIASA was working on global environmental issues, and I could not see how they could be addressed without a proper understanding of the development context of the South. In terms of both collaboration and problem definition, a North–South axis was missing.

In view of the widening gap between rich and poor, and increasing environmental concerns, it has become clear that in the search for global solutions the two agendas need to be addressed together. Although progress has been made in shifting the focus of development goals away from economic growth alone to include environmental and socioeconomic sustainability, the search for effective development strategies has been less successful. Indeed, the methods that have so far been applied in development strategies reflect only a small part of the accumulated knowledge of societal systems.

If the UN's Millennium Development Goals are to be achieved, new approaches are urgently needed to tackle inequality. In the context of globalization and the new technological revolution, the problems faced by developing countries are becoming increasingly complex. A systems approach is therefore essential in identifying strategies aimed at eliminating poverty, promoting economic growth, and achieving environmental sustainability.

There is a gap between the understanding of complex systems and the strategic application of that knowledge for the purpose of development. IIASA possesses the analytical tools and an interdisciplinary perspective. It is also deeply involved in research related to the global environmental agenda. I therefore challenge IIASA to include in its portfolio the task of bridging this gap and to guide the formulation of new strategies for sustainable development.

For this new approach to succeed, however, IIASA will need to reformulate its mission statement. It will also have to reposition the YSSP to attract new sources of funding for students from non-NMO countries. As a number of alumni pointed out, many universities in Europe are now offering an increasing variety of summer courses. IIASA could expand the program by introducing a series of supplementary one- or two-week courses during the summer, designed with the YSSP participants in mind, to which academics and practicing professionals could also be invited. These could include skills training courses or educational programs concerned with governance and capacity building in the South.

There is undoubtedly room for IIASA to enhance the YSSP's profile to make it better known to the outside world, not only among funding agencies and potential participants, but also among the public. As IIASA's membership expands, the YSSP could be promoted as a truly worldwide forum for the scientists of the future.

The alumni did not discuss the development of IIASA itself, which will obviously shape the YSSP, nor the range of scientific disciplines that IIASA and the YSSP could embrace over the next 25 years. They did, however, discuss some ways to ensure that all participants continue to make the most of their summer at IIASA.

Some panel members felt that the YSSP has undoubtedly become more output oriented over the years, with the result that the participants work harder, leaving little time for discussion and exchanging ideas. It is therefore important that YSSP project leaders continue to encourage the participants to make full use of the opportunity to reach out to other students and staff outside their projects, and to take an active part in the conferences, seminars, and workshops held at IIASA during the summer. They should also be further encouraged to organize seminars or workshops themselves, since such initiatives are often more rewarding for them than formal presentations by IIASA staff.

The network of alumni

The panel pointed out that the growing international network of YSSP alumni is a valuable asset for IIASA, both for maintaining its reputation and for promoting the program. The Institute could adopt a practice that has long been common in the United States and call upon the YSSP alumni, particularly those now working outside academe, to assist in fund-raising for the program. The network could undoubtedly be strengthened in a number of ways. A special YSSP alumni database or YSSP association, for example, would help to improve communications and encourage scientific exchange among alumni and between the alumni and scientists working at IIASA. While the YSSP midsummer workshop could continue to provide the setting for annual reunions, the inclusion of a special Alumni Day, perhaps focusing on a specific theme, would encourage more alumni to return to IIASA each summer to make contact with new participants and welcome them to the network.

The alumni felt that the IIASA Web site could be used more effectively both to strengthen the network and to attract new participants, particularly students from the South. For instance, abstracts of past YSSP projects could be posted on the site, stressing that projects may address socioeconomic issues that are relevant to the South, and not just the hard sciences. And, of course, the Web site should emphasize the many benefits of a summer at IIASA—social as well as professional.

In the time-honored IIASA tradition, at the end of the two-day workshop the YSSP participants, alumni, and staff were invited to the Schloss restaurant for a buffet, complete with a large birthday cake, accompanied by a Strauss waltz and a specially commissioned YSSP anthem.

Left: The 2002 "YSSPers." Right: YSSP alumni at the 25-year celebration.

The YSSP Experience

The YSSP is one of the Institute's most important activities. To get some idea of how the alumni themselves now feel about the program and how the experience has affected their professional careers, *Options* contacted a small sample of the 1,009 scientists who have participated in the YSSP over the past 25 years. The form and content of the responses varied enormously, ranging from one-line answers to a short novel, amply reflecting the very different personalities and the cultural and disciplinary backgrounds of these former YSSP scholars. Nevertheless, the overwhelming consensus is that participating in the summer program was unforgettable, for many different reasons, and in a number of cases it changed their lives.

The many young scientists who have taken part in IIASA's summer program may all have had some mixed feelings about leaving their home countries or concerns about their English, but they all recognized that the YSSP offered a unique opportunity, both professional and personal.

What stands out in your memory about your summer with the YSSP?

All of the former participants have clear memories of their summer in Austria, particularly those who were living abroad for the first time. Within the historic Schloss Laxenburg, they shared cubicles along the Kaisergang, with just enough space for two desks, two chairs, and little else. Their close proximity meant that they soon got to know each other, and many recall sitting outside their offices drinking coffee and discussing their research. Others remember the difficulty of working in the heat of the Austrian summer and the pleasure of eating ice cream in Laxenburg on hot afternoons.

The people

For all the YSSP alumni, the strongest memories of their summer at IIASA center on the people, both fellow participants and IIASA scientists. In IIASA's multicultural setting they were able to meet and work with young scientists from many countries, in the process establishing new friendships and professional relationships that they have maintained over the years.

While the backgrounds of their fellow participants may have varied enormously, several alumni were struck, not by their differences, but by the many things they had in common. This realization undoubtedly contributed to the sense of camaraderie, as well as to individual self-confidence. At IIASA, "working and playing alongside so many other doctoral students at a similar point in their careers, almost all navigating a different country, I realized that I might not be an idiot after all." One participant in the early 1980s remembers being surprised that a Finn should be wearing the same clothes as he and his friends were wearing back in California—"those were the early days of globalization."

One of the benefits of the summer "was simply being able to live a normal life in a foreign country and learning more about it than is possible on short visits." Being surrounded by "a group of young people in a foreign city where all normal routines are different undoubtedly encourages creative thinking, as well as a willingness to take risks." The experience was "definitely different from any we could normally have at a university" and offered real challenges, both intellectual and social.

The research

Working within IIASA's projects, the YSSP students are exposed to a broad range of research fields and are encouraged to develop new ways of looking at problems. They are able to draw upon the expertise of IIASA staff and fellow students trained in different disciplines. The types of YSSP projects may vary, but for many participants, the IIASA experience meant "being confronted with new types of research, research questions, perspectives, and the challenge of working in an interdisciplinary setting." As a result, many alumni claim that during the three months at IIASA their scientific interests broadened significantly, and many felt they were able to contribute to important new research fields.

Being part of a multidisciplinary team was another important new experience. Working with young scientists from other fields to address common

Tibor Vasko with the 1983 "YSSPers" at the traditional farewell Heuriger.

problems or issues, they were able to appreciate the value of different perspectives and individual contributions in finding workable solutions. "I became a member of a team working on complex real-life problems. The friendly atmosphere, the valuable advice, and constructive criticism provided perfect conditions for grasping the different socioeconomic, environmental, and methodological aspects of a problem, and understanding its complexity."

In particular, they appreciated the frank communication between established and young scientists, the feedback they received during seminars and presentations, and discussions led by eminent scientists from IIASA and other research institutes. Several alumni commented on the valuable role of their supervisor in answering "what must have sounded like stupid questions," and in helping them to understand the issues underlying complex problems.

The most valuable aspect of working at IIASA is that "it encourages researchers to 'think big,' globally, to look for general traits, address international differences, and move beyond conventional disciplines and dominant national and local perspectives." For a few individuals, the YSSP provided an opportunity to work with eminent scientists in projects addressing global issues. According to one student who worked in the Biosphere Project in the mid-1980s, "we were confronted with the challenges of studying large-scale environmental issues and of integrating various types of studies, issues, scales, and perspectives." That experience had an enormous influence on the student's career in that it "opened up new worlds of research and new research questions, as well as contacts and opportunities."

The summer program also offers temporary freedom from the constraints of a traditional multi-year research project. For some, the three months was perhaps too brief, but for one at least, it was "both short enough to mean that any big mistakes [could] be left behind in Vienna, yet long enough to sink one's teeth into something. The YSSP is no holiday, but rather an opportunity to accomplish something concrete, and that helps to build confidence."

The 1993 YSSP awards dinner.

Midsummer workshop

In the middle of the program, usually about six weeks after the students arrive, IIASA holds its annual midsummer workshop, where the participants make presentations summarizing their research. Many are understandably very nervous, especially those speaking in public in English for the first time.

In retrospect, the alumni feel that the workshop was a valuable experience, forcing them to think about how best to describe their work, to formulate preliminary hypotheses, or to propose new avenues for future research. It also enabled them to learn about one

Kal Raustiala (USA, YSSP '94) was awarded a Peccei Scholarship and spent parts of the next three years at IIASA studying environmental treaties. Since 2000 he has been professor of law at UCLA.

"Since my YSSP summer I have shifted disciplines, from political science to international law and the environment. I owe my good fortune in no small part to my time as a YSSP. Without that project, and that paper, I would not be where I am today."

Pekka Kauppi (Finland, YSSP '81) worked with IIASA's Acid Rain Project in 1982–1983 and in 1987–1988, and joined the Forestry Project in 2001. He holds the chair of Environmental Science and Policy at the University of Helsinki.

"IIASA is particularly useful for young professionals who have ideas and energy but who need training and a setting that allows them to communicate with each other and with experienced scientists."

Vicki Norberg-Bohm (USA, YSSP '87) is director of the Energy Technology Innovation Project at Harvard University, USA.

"It was at IIASA that I was first introduced to the concepts of industrial metabolism, sustainability, and patterns of technological change. My intellectual and professional life continues to revolve around these themes as I try to make a contribution to moving the USA as well as other countries toward a more sustainable energy system. Of equal importance, this was my first extended trip abroad, and it broadened my horizons considerably. The experience of working with scholars from around the world in an atmosphere that focused on international cooperation influenced my decision to focus much of my subsequent efforts on international cooperation for sustainable development."

another's projects, in the process becoming aware of the frequent overlap between different areas of research. They found the rehearsals, the guidance from their supervisors, and the feedback from the audience very useful in giving them a clearer perspective of their work. In particular, the workshops gave them confidence, "turning nervousness into positive energy," and helped them to improve their English and presentation skills.

At the end of each summer, the participants submit a paper on their research, to be considered for a Peccei or a Mikhalevich Scholarship. With these awards, the most outstanding students can return to IIASA to continue their work with a project of their choice. Many have indeed done so, and more than once. One criteria for the selection of the scholars is the novelty of their approach to a problem or issue, thus encouraging creative thinking. For those who met this challenge, the benefits have been enormous: "I owe my good fortune in no small part to my time as a YSSP. Without that project, and that paper, I would not be where I am today."

Social activities

A summer spent as a YSSP participant does not just involve hard work. IIASA staff organize a wide range of social activities, including evenings at local *Heurigen*, national days (one alumnus even claims to be still nursing the hangover from the Nordic midsummer party), sports events, and weekend trips to nearby cities such as Budapest and Prague.

It was a special time for many—"I will always remember my summer in Laxenburg: both intellectually and emotionally, it was terrific"; "I learned a lot, and at the same time I was able to enjoy the company of new friends, as well as the unique atmosphere of Vienna." One recalls "great times both at the Schloss and especially in the city, visiting beer gardens and standing at the back of the Vienna opera house." Others ventured further afield, hiking in the mountains or rock climbing in the Wienerwald; one student even fondly recalls returning home on the last bus to Mödling after a long day's work.

In what ways did the YSSP experience affect your life and career?

Participating in the YSSP affected the lives and careers of the former students in various ways. For many, the summer at IIASA represented an important turning point in their careers in that it provided the stimulus that pointed them in a completely different direction. Based on the project work they carried out in those three short months, some switched from theoretical to applied research, and others to an entirely different field. One, for example, decided to shift disciplines, from political science to international law, a change in emphasis "that was a direct result of my summer with the YSSP." Another had been planning to work on mathematical methods of modeling social security systems, but "over the summer [her] plans changed, and [she] became more interested in policy research," a decision that later led to an invitation to join a government expert group on pension reform in her home country.

Once immersed in IIASA's interdisciplinary research, some students were able to create novel links between fields, allowing them to take their research in a new direction. For many, the YSSP offered an opportunity to meet like-minded individuals who were equally frustrated with either the status or direction of their current research, and together they were able to find a new way forward. For one such student, "filling this gap as rigorously as possible became my task for the summer.…By the end of the summer I had

Tatiana Ermolieva (Ukraine, YSSP '97) was awarded a Peccei Scholarship and returned to IIASA in 1998 to work with the SSR Project.
"I regard the YSSP as a perfect guide for young scientists in their future careers. Over the last 30 years IIASA has benefited from the many scientists who have contributed their knowledge to a broad spectrum of research topics."

Michael Stoto (USA, YSSP '77) is senior statistical scientist and deputy director for public health at RAND, USA.
"IIASA exposed me to scientists from various disciplines working together to inform weighty policy decisions. Through 25 years as a faculty member of Harvard's Kennedy School of Government and School of Public Health, and as a senior scientist at the US National Academy of Sciences Institute of Medicine, this perspective has been central to my scientific work. For the last year, I've been working at RAND, using the same systems approach to help improve health security in the USA and abroad. So IIASA's YSSP program turned out to be much more than a fun way to spend the summer—for me it changed my professional life."

Peter Hackl (Austria, YSSP '80) is professor at the Department of Statistics at Vienna's University of Economics and Business Administration and has co-authored several IIASA books.
"I owe IIASA quite a bit. First, for contacts with very reputable individuals and with the international research community in general.…Also for the stimulus for my own research…and for the valuable memories of the people and the great atmosphere of this unique place."

finished a draft paper. Though it was not part of my doctoral thesis, the work that went into it formed the foundation for other papers that were."

While participating in the YSSP, a number of students made contacts with researchers who had a significant influence on their career paths. According to one alumnus, "I still maintain contact with some wonderful people, both fellow participants and IIASA scientists. I am now involved in scientific projects that I could only have dreamed about if I had not been at IIASA that summer." Many of the former students have maintained those professional relationships, whether collaborating on joint papers, working together in projects, or meeting at seminars and international conferences. Thus the network of YSSP alumni has continued to grow in terms of the number of members, its outreach across national borders, and its influence.

Have you stayed in touch with IIASA? If so, in what ways?

YSSP alumni have kept in touch with IIASA in various ways. Some have returned to continue their work as Peccei or Mikhalevich scholars, or to attend the many conferences or workshops held each year in Laxenburg. Others have returned for short periods as guest researchers, as long-term IIASA staff members, or as YSSP supervisors themselves. Many continue to visit year after year—one former participant has returned to work at IIASA every year since 1981! Alternatively, former participants have maintained their links with IIASA researchers and now continue the work they began there under IIASA contracts in their home countries.

A number of alumni acknowledge the work of the National Member Organizations (NMOs) in providing financial support for students in the form of scholarships and in promoting the YSSP. Since the program was launched in 1977, most of the political constraints on collaboration between scientists from East and West have disappeared, and for many young researchers from countries now in transition today's constraints are economic. With the generous support of some NMOs, however, a number of students from these countries are able to participate in the YSSP and become involved in the world of international science. The Swedish NMO, for example, supports students from Sweden and from countries in transition, hosts annual "post-YSSP" seminars, and organizes conferences to foster linkages between researchers at IIASA and Swedish universities. Similarly, the Dutch NMO is actively supporting the development of the network of YSSP alumni. In April 2000, it sponsored the first YSSP Conference, held at the Free University of Amsterdam, where alumni—environmental scientists working in 13 countries—were able to get together and share their experiences since leaving the program.

Have you recommended the program to others?

Many YSSP alumni now hold senior positions in universities in their home countries, or in national or international research institutions. Over the years, they have in turn recommended the program to their own students and colleagues, thus helping to maintain the flow of fresh young scientists so that they too can experience a summer in Laxenburg. One former student, now a professor, commented that he now promotes the YSSP among his PhD students, but is aware of "many more experienced researchers (and professors) who would also like to have such a unique opportunity to work at IIASA, even for a short time."

One former participant was so impressed by the YSSP experience that he wanted to do something to enable his colleagues back home in Ukraine to be able to share it. After discussions with senior IIASA researchers, it was decided to hold a conference in Kiev to bring together scientists working on similar projects at IIASA and in his home country. The conference, sponsored by the Swedish NMO, was a great success, helping to extend and strengthen the IIASA research network.

It is generally felt that most graduate students can learn a lot from participating in the YSSP. However, it probably "works best for sufficiently experienced, self-confident, and self-motivated individuals who are still

Petro Lakyda (Ukraine, YSSP '94) worked with IIASA's Forestry Project a number of times. He is now head of the Forest Management Department and vice-rector of the National Agricultural University, Kiev, Ukraine.

"The YSSP was my first experience with an international research organization and it influenced greatly my future work. I have recommended the YSSP to a number of young scientists in Ukraine. Two of my students have successfully participated in the YSSP, also with IIASA's Forestry Project."

Meredith Golden (USA, YSSP '86) is senior staff associate with the Center for International Earth Science Information Network (CIESIN) at Columbia University's Earth Institute. She balances her professional work at CIESIN with raising her two children. In 1982, Meredith was a research scholar with the Management and Technology Program.

"In IIASA's YSSP I learned how to converse with scientists from diverse disciplines and many countries. Currently, I'm working with medical researchers, social scientists, and geoscientists primarily from the United States and Bangladesh on the issues related to arsenic in drinking water. In meetings, I often see my role as a translator of information across technical and cultural boundaries—a role that the YSSP certainly nurtured."

open, flexible, and willing to learn." It is definitely an advantage if the students have some experience, skills and interests that "fit" with IIASA's ongoing projects, and are willing to spend the summer developing new interests and projects where they can use their own experience and ideas.

What do you think has contributed most to the success of the YSSP?

Many things have changed significantly in the quarter century since the YSSP was launched as an East–West "think tank" at the height of the Cold War. The world's political landscape is now very different, as are the range and the scale of the problems that need to be addressed. IIASA's projects have evolved accordingly, to ensure that new generations of scientists and policymakers are equipped to address new challenges as they arise. Through the YSSP, IIASA has continued to encourage students to "think big," in projects focusing on global issues such as the environment, climate change, the impacts of technological change, etc., as well as developing new methodologies for addressing the social problems that affect all nations.

In the early years, the program brought together young scientists from nations in conflict in the Cold War, offering them an opportunity to build bridges across the ideological divide. Western alumni valued the experience of working alongside Soviet, Czech, or East German scientists, which they could have had nowhere else. Students from the former East bloc countries appreciated the facilities at IIASA, such as the library, and access to databases and communications networks, which were not available to them in their home institutions and which contributed to their later scientific work. Some of those early students have since returned to IIASA to attend conferences or to study the potential impacts of economic reforms in the post-communist era.

There is general agreement that the key to the continuing success of the YSSP is that it enables "young people to work together in a friendly environment that is ideal for thinking and developing their ideas." The interdisciplinary nature of the research at IIASA means that students can draw upon many different areas of expertise, and in the process "understand that scientists cannot be blind to other fields of science." One alumnus is still grateful for "the holistic thinking that so characterized the IIASA research environment." The program "is important both for IIASA, and for young scientists all over the world," and out of it many things grow: "new scholars, new staff for IIASA, a sense of scholarly community, and true international collaboration."

What is your vision for the future of the YSSP?

Teamwork is regarded as an essential part of the YSSP, "with IIASA staff and students working together to address important issues. This could of course be complemented by individual tasks, but it is important that the students are well integrated into projects," and that they are encouraged to look beyond their different disciplinary and cultural backgrounds.

IIASA should continue to address the "big" international issues, and strengthen its position as a center of excellence for global change research. Since "this kind of research focus is rare in some countries and regions, it is important that the YSSP students can meet people from many countries, including those outside the industrialized world," in order to assist their integration into international research networks.

Now that the barriers between East and West no longer exist, several alumni commented that in the future they would like to see more emphasis on North–South research collaboration. Thus, the YSSP should encourage more students from developing countries, as well as from countries in transition, regardless of whether they are IIASA members. As the membership of IIASA expands, most recently to include China, and, hopefully, more countries in the future, "the program could become a truly worldwide forum for young intellectuals." Indeed, IIASA could perhaps use the YSSP strategically to "recruit" new member countries.

Jolanta Perek Bialas (Poland, YSSP '97) is now lecturer at the Jagiellonian University, Cracow, Poland.
"While participating in the YSSP I was able to meet and still maintain contact with some wonderful people, both fellow participants and IIASA scientists. I am now involved in some scientific projects that I could only have dreamed about if I had not been at IIASA that summer."

Serguei Glaziev (USSR, YSSP '88) worked in the Technological and Economic Dynamics Project. He served as Russia's minister for foreign economic relations from 1992 to 1993. He is currently head of the Information and Analysis Department, Council of the Federal Assembly of the Russian Federation.
"The YSSP experience helped me to understand more about the world and life in general. I have also benefited from the new information and research opportunities that the IIASA network provides."

Peccei and Mikhalevich Scholarships

Each year, IIASA presents three awards—two Aurelio Peccei Scholarships and one Vladimir S. Mikhalevich Scholarship—to the most outstanding YSSP participants. These awards enable the recipients to return to IIASA for a further three months to work in a project of their choice. To date, IIASA has awarded a total of 48 scholarships to summer students from 17 countries.

In cases where the standard of the participants' contributions is exceptionally high, the selection committee may also decide that "Honorable Mention" citations should be awarded. So far, 11 YSSP participants have received such citations.

The Peccei Scholarship was established in 1984 in recognition of Dr Aurelio Peccei's contribution

Peccei scholars, 1984–2001

Year	Winner	Country	Program/Project
1984	Sara Johnson	USA	System and Decision Sciences
	Kees van Paridon	Netherlands	Economic Structural Change
1985	Maria Holmberg	Finland	Acid Rain
	Andrew Foster	USA	Population
	Rafal Serafin	Canada	Biosphere Dynamics
1986	Steven Underwood	USA	Biosphere Dynamics
	Yuri Ledyaev	USSR	System and Decision Sciences
	Peter Tallos	Hungary	System and Decision Sciences
	Yuri Kuznetsov	USSR	Biosphere Dynamics
1987	Mikhail Ter-Mikaeljan	USSR	Environmental Monitoring
1988	Harry O. Helmisaari	Sweden	Biosphere Dynamics
	Nedjalko Nikolov	Bulgaria	Biosphere Dynamics
	Olivier Dordan	France	System and Decision Sciences
1989	Ralph F. Lehmann	Germany	Transboundary Air Pollution
1990	Deanna Haunsperger	USA	Population
	David Rios-Ínsua	Spain	System and Decision Sciences
	Yasumasa Fujii	Japan	Environmentally Compatible Energy Strategies
1991	Wolfgang Keller	Germany	Economic Reform and Integration
	Elena Boulanger	USSR	System and Decision Sciences
	Amanda Wolf	USA	Processes of International Negotiation
1992	Andrei Ganopolski	Russia	Environmental Change and Development
	Wolfgang Schopfhauser	Austria	Forestry
1993	Susan Murcott	USA	Water Resources
	Charlotte Jönsson	Sweden	Transboundary Air Pollution
	Karl Henrik Johansson	Sweden	Dynamic Systems
1994	Kal Raustiala	USA	International Environmental Commitments
	Mari Pöyhönen	Finland	Methodology of Decision Analysis
	Alexander Tarasyev	Russia	Dynamic Systems
1995	Gary Wojcik	USA	Transboundary Air Pollution
1996	Lauren Hale	USA	Population
	Patricia Kandelaars	Netherlands	Population
1997	Keigo Akimoto	Japan	Environmentally Compatible Energy Strategies
	Tatiana Ermolieva	Ukraine	Risk, Modeling and Policy
1998	Margaret Taylor	USA	Environmentally Compatible Energy Strategies
	Anton Dobronogov	Ukraine	Risk, Modeling and Policy; Social Security Reform
1999	Lily Panyacosit	USA	Transboundary Air Pollution
	Janica Ylikarjula	Finland	Adaptive Dynamics Network
2000	Ulrike Dusek	Austria	Transboundary Air Pollution
	Odd Godal	Norway	Risk, Modeling and Society
2001	Anna Gårdmark	Sweden	Adaptive Dynamics Network
	Yanhong Jin	China/USA	Land Use Change

toward understanding global problems and his efforts to promote multinational collaborative research. Dr Peccei was one of the founders of IIASA, but is perhaps best known as the former president of the Club of Rome. He enjoyed a distinguished career in industry, conservation, and international affairs. His hallmark was a humanistic approach to the problems confronting the modern world, whether economic, technological, managerial, or political. Dr Peccei was a consistent and devoted friend of IIASA, a member of the small group of individuals who inspired the original concept of the Institute and actively contributed to its realization. In his later years, his overwhelming concern was the challenge of finding creative opportunities for young people to influence a shared future.

Sara Johnson (Stanford University, California) and Kees van Paridon (Erasmus University, Rotterdam) were chosen as the first Peccei scholars in 1984. Johnson worked within IIASA's System and Decision Sciences Program and designed and implemented a decision support system on a micro-computer to aid group decision making. Van Paridon worked in the Economic Structural Change Program to develop a possible explanation of long waves based on underlying economic processes and combining elements of the theories of growth and structural change and international trade.

The Mikhalevich Scholarship was established in 1995 following the untimely death of Academician Vladimir S. Mikhalevich, the Council member of the Ukrainian Academy of Sciences mainly responsible for the Ukraine's membership in IIASA. Academician Mikhalevich was associated with IIASA for many years in a scientific capacity, as a member of the System and Decision Sciences Advisory Committee, and as chairman of the IIASA Council from 1987 to 1992. Perhaps less well known, but equally important, was Academician Mikhalevich's role in the academic world of the former Soviet Union. At a time when it was not popular, he ventured into cybernetics and employed computers for tackling mathematical problems. In addition to his own pioneering work, he unfailingly encouraged young researchers to explore new avenues and to think creatively and independently.

In 1995, the first Mikhalevich Scholarship was awarded to Carina van Vliet (Erasmus University, Rotterdam). Van Vliet worked in IIASA's Optimization under Uncertainty Project, studying stochastic modeling for the development of a micro simulation model to help decision makers in the struggle against the spread of specific diseases in developing countries.

The selection procedure

At the end of the summer, the YSSP supervisors nominate candidates to be considered for a Peccei or a Mikhalevich Scholarship. A selection committee consisting of the director of IIASA, the dean and vice-dean of the YSSP, and internal and external reviewers assesses the candidates on the basis of the following:

- Research reports prepared during the summer, evaluated according to the complexity of the subject, originality of approach, policy relevance, advancement of a theory, the interdisciplinary character of the research, and whether the conclusions are justified and relevant to IIASA's work
- Supervisors' evaluations of the candidates' work and their professional interactions with other participants and staff, as well as their contribution to the program and to IIASA's objectives as a whole

Mikhalevich scholars, 1995–2001

Year	Winner	Country	Program/Project
1995	Carina van Vliet	Netherlands	Optimization under Uncertainty
1996	Oscar De Feo	Italy	Dynamic Systems
1997	Mikko Heino	Finland	Adaptive Dynamics Network
1998	Gebhard Banko	Austria	Forestry
1999	Kevin Wheeler	USA	Land Use Change
2000	Kalle Parvinen	Finland	Adaptive Dynamics Network
2001	Elena Moltchanova	Russia/Finland	Forestry

Keigo Akimoto, Peccei scholar 1997
Yokohama National University, Japan
Project: Environmentally Compatible Energy Strategies (ECS)

Keigo Akimoto addressed the impacts of climate model uncertainties on future energy sector emissions profiles for given climate stabilization targets (e.g., temperature or CO_2 concentrations). He found that model uncertainties exemplified by climate sensitivity—that is, temperature change for a doubling of CO_2 concentrations and carbon cycle uncertainties (quantified via a CO_2 fertilization carbon cycle calibration parameter)—are so large as to preclude the derivation of short- to medium-term emission limits or carbon tax levels for particular climate stabilization targets.

Using the energy sector linear programming model MESSAGE (developed at IIASA) and a climate model (derived from Tom Wigley's MAGICC model), Akimoto introduced modifications to both models in order to perform his simulations and documented the work in four papers. Akimoto made a direct contribution to the ECS research program by extending the capabilities of MESSAGE.

In nominating Akimoto, Dr Arnulf Grübler (TNT) wrote: "Keigo's findings redress the policy question at stake; the issue is not to agree on quantities or prices of near-term emission reductions, but rather how best to use small signals to prepare for possible long-term emission reduction contingencies. Keigo's results indicate that the current debate about the timing of emission abatement is much of a misnomer, as 'optimal' emission reductions simply cannot be derived with a single 'best guess' climate model parametrization."

Mikko P. Heino, Mikhalevich scholar 1997
University of Helsinki, Finland
Project: Adaptive Dynamics Network (ADN)

Mikko Heino worked on three studies, which he documented in three separate papers. In the first, "The enigma of frequency-dependent selection," he looked at a long-standing problem in evolutionary theory. It departs from the classical population genetic concept of frequency-dependent selection. With the advent of the new adaptive dynamics framework, it has become increasingly evident that the classical definition must be expanded in order to encompass a more realistic system of limited growth.

In his second paper, "Management of evolving fish stocks," Heino addressed the problem of the evolution of fish stocks in a managed system. Whereas contemporary management strategies assume that fish life histories remain constant, empirical studies demonstrate that stocks respond to the selective pressures imposed by commercial exploitation.

In his third paper, "Evolution of mixed reproductive strategies in simple life-history models," Heino reviewed an emerging theory in adaptive dynamics. Concepts of "limiting similarity" and "competitive exclusion" have been central to our understanding of coexistence and diversity in ecological habitats, but the new notion of "effective environmental dimensionality" puts these approaches into a broader and unified context. Heino demonstrated how this insight could be utilized to predict the evolution of stable polymorphism or mixed strategies in life-history traits—issues that theoretical ecologists have pondered for decades.

In his nomination, Dr Ulf Dieckmann (ADN) wrote, "What really impressed me about Mikko's research is the breadth of his competence. The three papers…touch on very different and equally demanding aspects of ecological and evolutionary research." According to Professor J.A.J. Metz (University of Leiden, the Netherlands), who worked with Mikko on two projects, "He is very sharp and efficient…willing to spend time on getting his ideas across. Mikko clearly took the lead. He identified the questions, and the lines along which we were going to proceed."

Anton Dobronogov, Peccei scholar 1998
University of Kiev, Ukraine
Project: Social Security Reform (SSR)

Anton Dobronogov analyzed social security systems in transition economies, and adapted the SSR Project's economic–demographic model to simulate the Ukrainian case. He introduced two new elements into the model, including the informal sector of the economy and public-sector debt dynamics. His simulations for a period of 30 years indicate the near impossibility of introducing effective social security reforms without reducing the share of the informal sector.

In his nomination, Dr Landis MacKellar (SSR) noted, "What was most striking to me about Anton was the facility with which he picked up the logic of model-based policy analysis. This is as much an art as a science, and it is surprising how many otherwise analytically gifted scientists have no knack for it." Professor Andries Nentijes (University of Groningen, the Netherlands) wrote in his review, "This is a paper of good quality. I appreciate the formulation of the

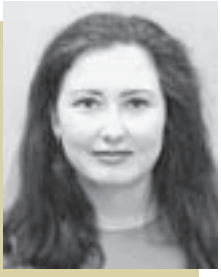
research question: concentrating on government debt as the balancing item. The originality is in the adjustment of an existing model to take account of the specific situation of the Ukraine."

Lily Panyacosit, Peccei scholar 1999
University of California at Berkeley, USA
Project: Transboundary Air Pollution (TAP)

Lily Panyacosit conducted a critical review of health-impact studies focusing on the effects of fine particulate matter (PM), including size fraction characteristics and their chemical properties. She evaluated various sources of PM and the differences in indoor/outdoor exposure in developed and developing countries. Focusing on developing countries (including megacities), Panyacosit reviewed studies analyzing the acute and long-term health effects of PM and the biological plausibility, as well as exposure–response curves. The paper formed the basis for further work linking PM emissions and control strategies (prepared in the RAINS model) and their health impacts. This work is being continued in the TAP Project.

Dr Jocelyne Clench-Aas (Norwegian Institute for Air Research) wrote in her review, "Expanding the topic of health effects of exposure to particulate matter to include differences between developed and developing countries was a useful concept." Dr Mike Holland (AEA Technologies, UK) commented, "I was very impressed by this paper, which I will certainly recommend to others. The paper provides an extremely well balanced account—better than I have seen from some acknowledged health experts!"

Janica Ylikarjula, Peccei scholar 1999
Helsinki University of Technology, Finland
Project: Adaptive Dynamics Network (ADN)



Janica Ylikarjula worked on two projects during her summer with the YSSP. In the first, she derived a population dynamics model for fish populations, parametrized the model on the basis of published studies of perch populations, introduced modifications necessary for conducting the evolutionary part of the study, and then analyzed the model and extracted the results. Ylikarjula's work was the first theoretical analysis of stunted growth in fish—an important phenomenon in both applied and theoretical marine and freshwater biology. As a consequence of her work, the occurrence of stunted growth in fish is now theoretically well understood.

Ylikarjula also successfully completed a second study by utilizing the model developed in the first part of her project to study the impacts of resource limitations (modeled as density-dependent individual growth) on complex population dynamics.

Dr Mikko Heino (University of Helsinki) wrote in his nomination, "This is an important contribution to current research in evolutionary ecology.…Janica's findings are likely to change the way ecologists think about complex dynamics in age-structured populations." In his review, Dr Per Lundberg (Lund University, Sweden) commented that her paper "has great novelty in its approach and is a nice example of how relatively simple models can explain rather complex phenomena in ecology."

Odd Godal, Peccei scholar 2000
University of Bergen, Norway
Project: Risk, Modeling and Society (RMS)

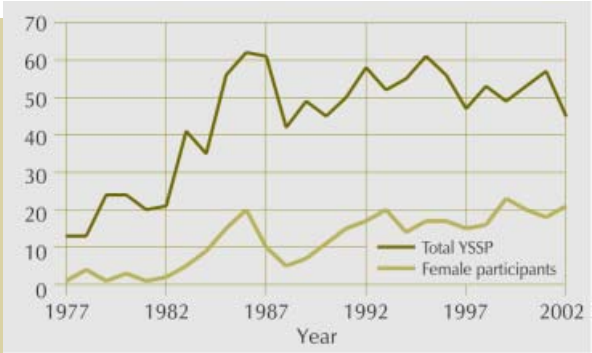
In his project, Odd Godal built a model that simulates a permit trading scheme taking into account uncertainties with regard to emissions. The approach is extremely complex, combining both theoretical proof of convergence, given the uncertainty in reported carbon emissions, with empirical simulations of the carbon permit market. In contrast with the standard theory, the players have the options to reduce carbon emissions or to buy emission permits to meet the (Kyoto) carbon constraints, but can also improve their emissions monitoring in order to reduce the uncertainty. Godal proved that in this case, bilateral sequential trading converges to a market equilibrium, and he derived the conditions for this optimum.

In their nomination, Dr Yuri Ermoliev (RMS) and Dr Ger Klaassen (ECS) noted that, "To our knowledge this is the first time that uncertainty on reported emissions and the possibility to invest in monitoring to reduce this uncertainty has been introduced in a system of bilateral, sequential emission trading." In his review, Dr Mark Smith (Colorado College, USA) wrote: "I was impressed with this paper. It is extremely well written—better than most of the other papers I have read on emission trading. The problem is clearly motivated, the methodology is lucid, and results and conclusions flow convincingly from the method and data." Godal's work was relevant to three IIASA projects (ECS, FOR, and RMS) and offers a good illustration of the strengths of IIASA's approach—systems analysis combined with policy-relevant applications.

About the YSSP

Through the YSSP, IIASA aims to contribute to the development of a cadre of specialists with broad interdisciplinary and cross-cultural perspectives, and the worldwide network of such specialists for collaborative work. It also aims to groom future staff for IIASA and other national and international research organizations dealing with global issues.

For three months—from the beginning of June to the end of August—the YSSP participants work within IIASA's existing research projects under the supervision and guidance of senior scientists. The supervisors and participants together determine the scope of the research, the areas of responsibility, and the extent of independent work. The proposed research should be focused so that it can be supervised and completed during the summer. At the annual midsummer workshop, the participants make brief presentations summarizing their research. All participants are expected to produce, individually or jointly, reports or articles that may be published in IIASA's Interim Report series.



YSSP participants by gender, 1977–2002.

About IIASA

The International Institute for Applied Systems Analysis (IIASA) is an interdisciplinary, non-governmental research institution sponsored by a consortium of National Member Organizations (NMOs) in 17 nations in Asia, Europe, and North America. The Institute's strategic goal for the 21st century is to conduct international, interdisciplinary scientific studies to provide timely and relevant information and options concerning critical issues of global environmental, economic, and social change for the benefit of the public, the scientific community, and national and international institutions.

IIASA's core research themes

Energy and Technology

Energy and technology are fundamental drivers of development and are central elements of globalization. The development of energy resources and the introduction and distribution of energy and other new technologies can control the future growth and distribution of economic opportunities in much of the world. Research focuses on expanding long-term global energy modeling frameworks and infrastructure models, developing a better understanding of the relationship between innovation and R&D, and applying new insights and methods to analyze the diffusion of new technologies in time and space, including their economic and social implications as well as possible environmental impacts.

Environment and Natural Resources

The environment and natural resources are among the most pressing global issues, as the human capacity to alter and manipulate the natural environment grows with economic and technological development, and demographic and socioeconomic changes. IIASA's research on the impacts and linkages between global change and the environment and natural resources focuses on air pollution and climate change, forestry, land use, and freshwater systems. Other selected ecosystems and management issues are analyzed through adaptive dynamics—a tool for linking the ecological and evolutionary consequences of environmental change.

Population and Society

With population being recognized as a driving force of global change, this theme deals with both the determinants and consequences of various population trends. Methodological work on population dynamics and projections feeds into other IIASA research on how such alternative future trends may influence global change concerns such as climate, forestry, air pollution, and freshwater systems. In turn, research also focuses on the social and economic risks associated with global change, including weather-related disasters, and the social risks associated with aging and health issues.

Further information on individual projects can be found on the IIASA Web site: www.iiasa.ac.at

Who is eligible?

Predoctoral students from all countries may participate in the YSSP and are encouraged to apply. Applicants should be second- or third-year predoctoral candidates, aged between 22 and 35 years, who expect to be awarded a PhD or equivalent within the next two years. All efforts will be made to satisfy the preferences and academic interests of the participants, and to ensure a balance of nationalities, genders, and disciplines.

The Institute's working language is English, so an acceptable working level of written and spoken English is required. Candidates who are not native English speakers should provide a certificate or some other official document as proof of their proficiency in English.

Funding

Many IIASA NMOs provide special stipends to enable young scientists to participate in the YSSP. Details for contacting NMOs are available under "Member Countries" on IIASA's Web site: www.iiasa.ac.at

How to apply

Applications for the summer program must be submitted by the end of the preceding January. Please use the electronic registration form at: www2.iiasa.ac.at/Admin/yssp/registration

For further information, please contact IIASA's YSSP coordinator (ysspinfo@iiasa.ac.at).

Special Thanks to Maggie

Some YSSP alumni probably best remember her for her help in adjusting to life in Austria; others, for her kindness and her ready laugh. Still others remember her as a traveling companion during the many weekend trips she has planned to places such as Budapest and Hallstatt. As program coordinator, Margaret (Maggie) Traber has become, for many of us, the heart and soul of the YSSP.

Margaret began her IIASA career in 1978 in the office of scientific recruitment. In 1985, she was appointed coordinator of the YSSP, at that time with 56 participants. Her role as program coordinator keeps her occupied year-round: processing the applications in the winter, notifying successful applicants and arranging their accommodation in the spring, overseeing the program in the summer, and organizing the Peccei and Mikhalevich awards in the autumn. Her job, however, goes far beyond coordinating and running the program—she devotes many unpaid hours to planning and accompanying the young scientists on trips in and around Austria, and many weekends showing them the sights of Vienna. And, of course, keeping in touch for years afterward. Margaret's attachment to her "YSSPers" has always run deep, and every year she finds it difficult to say good-bye, as one alumnus witnessed firsthand:

> The lion's share of the "YSSPers" had already left, and I was talking with [Joanne Linnerooth-Bayer] in her office. Maggie entered, a little shy, with tears in her eyes. We immediately knew what it was about: yet again, her "YSSPers" were gone. The research we had been discussing suddenly seemed so unimportant…

The upcoming 2003 summer program will be Margaret's last before her retirement. As with the "YSSPers" at each summer's end, it will be difficult to say good-bye. With her departure, she will enter the ranks of the IIASA alumni who have made IIASA and the YSSP what it is today. The IIASA staff and all past YSSP participants thank Margaret for her many years of service to the YSSP, and for just being Maggie. *JLB*

IIASA National Member Organizations

Austria The Austrian Academy of Sciences
*Bulgaria** The Ministry of Environment and Waters
China The National Natural Science Foundation of China
Czech Republic The Academy of Sciences of the Czech Republic
Finland The Finnish Committee for IIASA
*Germany*** The Association for the Advancement of IIASA
Hungary The Hungarian Committee for Applied Systems Analysis
Japan The Japan Committee for IIASA
*Kazakhstan** The Ministry of Science—The Academy of Sciences
Netherlands The Netherlands Organization for Scientific Research (NWO)
Norway The Research Council of Norway
Poland The Polish Academy of Sciences
Russian Federation The Russian Academy of Sciences
Slovak Republic The Executive Slovak National Committee for IIASA
Sweden The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS)
Ukraine The Ukrainian Academy of Sciences
United States of America The American Academy of Arts and Sciences

*Associate member
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