

**Guest Editorial**

In 1982 I participated in the IIASA Young Scientists Summer Program (YSSP) within the Human Settlements and Services (HSS) Area. Established in 1975 to research the human endowment of the Earth, HSS would later become the World Population Program (POP). I have been privileged to work under all three POP leaders: Andrei Rogers, Nathan Keyfitz, and Wolfgang Lutz.

To characterize POP over the years in just one word, the word *heterogeneity* would seem to be the most suitable.

First, there has been a remarkable heterogeneity of skills among POP staff. We have had demographers, sociologists, biologists, economists, mathematicians, physicians, geographers, and physiologists on the team. We have even had a priest, a musician, and a dentist.

Heterogeneity has also been the key theme of POP research in its 40 years of existence. During the first 20 years POP pioneered the development of methods of multistate demography. This began with work on spatial heterogeneity, and extended to observable heterogeneity in population subgroups and to the development of methods for dealing with hidden heterogeneity. It became apparent that heterogeneity plays a crucial role in understanding demographic processes, in explaining past population dynamics and foreseeing future ones.

Over the second 20 years we built upon previous methodological research at IIASA and expanded it into the fields of human capital and sustainable development, wherever possible considering the issue of uncertainty. We showed that 21st century demography has to explicitly account for population heterogeneity in education, in physical and cognitive health, and in people's beliefs. It has a profound effect on all aspects of social and economic development, including the adaptive capacities of populations to changing environment in the broadest sense and even on the speed of population aging.

As POP research shows, 40 is the new 30, as far as age goes. I think this also applies to the POP Program itself. We are still young, energetic, and full of new ideas. I am proud to be part of it all.

—Sergei Scherbov

## IIASA Population Research 1975–2015

### 40 years of making demography relevant to global sustainable development

*The most difficult global problems require innovative approaches using the best demographic methods*

IASA was founded in 1972 through a unique joint effort of political leaders from east and west of the Iron Curtain to jointly address the social, economic, and environmental challenges of the world using the quantitative tools of systems analysis. After the Cold War ended, the political context changed. However, the planetary challenges remained the same, and the threats posed by climate change, for instance, are receiving more recognition than ever before. In response to these challenges IIASA has transformed into a truly global research institute of 23 member countries, including all the BRICS countries Brazil, Russia, India, China, and South Africa.

When Andrei Rogers joined IIASA in 1975 to lead a group focusing on population analyses—then called Human Settlements and Services (HSS)—IIASA became the cradle of multidimensional (or multistate) population analysis and projections. These are powerful analytical tools that explicitly address and quantitatively model the heterogeneity of human populations in a way that goes beyond the conventional breakdown of the population by age and sex.

This work was further strengthened and broadened when Nathan Keyfitz joined IIASA in 1984 to lead the Population (today World Population) Program (POP) for ten years following his retirement from Harvard. During this time POP began path-breaking work on mortality and heterogeneity dynamics. Keyfitz also laid the methodological foundations for the probabilistic projections that POP was later to produce, and he wrote pioneering papers on population and environment interactions. Some of the world's best mathematical demography was thus carried out within the stimulating interdisciplinary environment of IIASA, with its emphasis on exploring the solution space for the world's most pressing problems. This was a unique combination, and it turned out to be a recipe for success. ►



POP STAFF, SUMMER 2015



Wittgenstein Centre

FOR DEMOGRAPHY AND  
GLOBAL HUMAN CAPITAL  
A COLLABORATION OF IIASA, VID/CIAW, WU



International Institute for  
Applied Systems Analysis  
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Since the early 1990s POP has ventured into more applied research using these powerful new methodologies, both in the field of empirical Population–Development–Environment (PDE) studies and on actual population projections. Starting with in-depth PDE case studies from Botswana, Mauritius, Mozambique, Namibia, and the Yucatan peninsula of Mexico, multidimensional population modules—which stratify the population by age and sex and also by level of education, place of residence, and even HIV-status—were modeled with respect to their interactions with changing economic structures, energy, water, land use, and food supply. Another series of Population–Education–Development–Agriculture (PEDA) modeling was carried out in collaboration with African partners. Much of the IIASA work in this field is summarized in “Population and Environment: Methods of Analysis,” a 2002 Special Supplement of *Population and Development Review* and also in a 2001 book, *Population and Climate Change*.

In 1996 POP produced the first probabilistic projections of the world population. These evolved from earlier work and produced large numbers of scenarios that systematically varied fertility, mortality, and migration assumptions to study their sensitivity in terms of different outcome variables. This was the beginning of a series of global probabilistic projections

which resulted in three papers in *Nature* and many other publications. The titles of the three *Nature* papers are also indicative of the evolution of concerns in world population. The 1997 paper was entitled “Doubling of world population unlikely.” A new assessment in 2001 entitled “The end of world population growth” indicated that there would be a high chance of world population ceasing to grow before the end of this century. The 2008 paper was entitled “The coming acceleration of global population ageing.”

Starting with a 2005 publication in *Nature*, “Average remaining lifetimes can increase as human populations age,” POP developed a number of alternative new aging indicators that not only consider time since birth but also remaining life expectancy. This has since developed into an important line of research that studies differentials in declining health and cognitive performance and uses them for redefining age and ageing in an international long-term perspective.

Today POP continues to address the human development dimension of global change. It comprehensively studies the changing size and composition of human populations around the world and analyzes both their impacts and vulnerabilities. Since 2011 POP has been part of the Wittgenstein Centre for Demography and Global Human Capital, a collaboration between IIASA, the Vienna Institute of

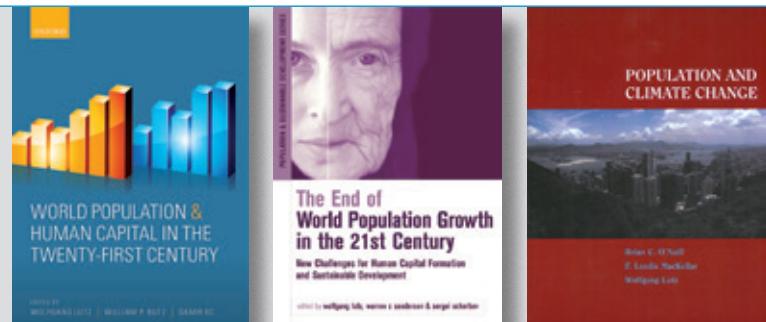
Demography (VID) of the Austrian Academy of Sciences, and the Vienna University of Economics and Business (WU).

Over the past decade POP, together with its partners in the Wittgenstein Centre, has been spearheading the application of the multidimensional methods of population dynamics to the reconstruction and projection of populations by age, sex, and different levels of educational attainment. This work culminated in the recent publication of a major book with Oxford University Press entitled *World Population and Human Capital in the 21st Century* which presents a comprehensive state-of-the-art summary of the drivers of population change as well as alternative scenarios for all countries. These new population projections by age, sex, and level of education also form the “human core” of a new widely shared set of climate change-related scenarios that were designed to cover the socioeconomic challenges to both climate change mitigation and adaptation. Called the “Shared Socioeconomic Pathways” (SSPs), these cover the global social trends in a richer and much more relevant way than previous scenarios that considered only population size. They also allow for the definition of economic growth scenarios which are fully consistent with the changing age-education structure for every point in time and every country according to the SSP narratives.

## POP Publication Highlights

### Articles and Letters in *Nature* and *Science*

- Lutz W, Butz WP, KC S, Sanderson WC, Scherbov S (2014). Population growth: Peak probability. *Science* 346(6209):561 (Letter).
- Lutz W, Muttarak R, Striessnig E (2014). Universal education is key to enhanced climate adaptation. *Science* 346(6213):1061–1062.
- Lutz W, Butz WP, Castro M, Dasgupta P, Demeny PG, Ehrlich I, Giorguli S, Habte D, Haug W, Hayes A, Herrmann M, Jiang L, King D, Kotte D, Lees M, Makinwa-Adebusoye PK, McGranahan G, Mishra V, Montgomery MR, Riahi K, Scherbov S, Peng X, Yeoh B (2012). Demography’s role in sustainable development. *Science* 335(6071):918 (Letter).
- Lutz W, KC S (2011). Global human capital: Integrating education and population. *Science* 333(6042):587–592.
- Sanderson WC, Scherbov S (2010). Remeasuring ageing. *Science* 329(5997):1287–1288.
- Lutz W, Crespo Cuaresma J, Sanderson WC (2008). The demography of educational attainment and economic growth. *Science* 319(5866):1047–1048.
- Lutz W, Sanderson WC, Scherbov S (2008). The coming acceleration of global population ageing. *Nature* 451(7179):716–719 (Letter).
- Lutz W, Kritzinger S, Skirbekk V (2006). The demography of growing European identity. *Science* 314(5798):425.



- Sanderson WC, Scherbov S (2005). Average remaining lifetimes can increase as human populations age. *Nature* 435(7043):811–813 (Letter).
- Lutz W, O’Neill BC, Scherbov S (2003). Europe’s population at a turning point. *Science* 299(5615):1991–1992.
- O’Neill BC, Grubler A, Nakicenovic N, Obersteiner M, Riahi K, Schrattenholzer L, Toth FL (2003). Planning for future energy resources. *Science* 300(5619):581–584 (Letter).
- Lutz W, Shah MM, et al. (2002). Population should be on the Johannesburg Agenda. *Nature* 418(6893):17 (Correspondence).
- O’Neill BC, Oppenheimer M (2002). Dangerous climate impacts and the Kyoto Protocol. *Science* 296(5575):1971–1972.
- Lutz W, Sanderson WC, Scherbov S (2001). The end of world population growth. *Nature* 412(6846):543–545 (Letter).
- Lutz W, Sanderson WC, Scherbov S (1997). Doubling of world population unlikely. *Nature* 387(6635):803–805 (Letter). ■

The multidimensional demographic approach originating from early IIASA research has recently been further generalized in the context of the paradigm of "Demographic Metabolism." This notion—originally coined by Norman Ryder in his 1965 article on the cohort approach—refers to social change through successive cohort replacement. This slow but steady change of societies through generational change and the partly quantifiable and predictable change that results from younger cohorts with different characteristics moving up the age pyramid, has been described as a predictive theory of socioeconomic change. Further applications of this approach of projecting change along cohort lines were produced in the fields of religion and cognitive abilities. These generalizations of the multidimensional demographic approach to fields that lie outside the realm of conventional demography clearly help to make demography more relevant.

Over the years POP has also made several efforts to go beyond the usual scientific dissemination of its work and to become actively involved in high-level science–policy communications. It hosted and facilitated two global scientific panels on population and sustainable development to feed into the 2002 and 2012 World Conferences in Johannesburg and Rio, respectively. At the moment POP is working with key global partners on synergies between the education goals and the other Sustainable Development Goals (SDGs) that the world community will set in September 2015.

In the course of its history POP has always aspired to be a leader in expanding demographic methods to make useful contributions to the human dimension of the analysis of contemporary global challenges. In 2014 an independent external evaluation concluded that "IIASA's World Population Program (POP) maintains its status as the globally leading institution for demography and sustainability." It will be an exciting challenge for the coming years to continue to make demography relevant through the combination of cutting-edge methodological research that is applicable to pressing global problems. We can only hope to achieve this with the continued support from our partners in the Wittgenstein Centre and in collaboration with other IIASA programs and colleagues around the world. ■

**Wolfgang Lutz**  
POP Director since 1994



### Message from Pavel Kabat

#### IIASA Director General and Chief Executive Officer

There are several major actors today in the field of global change. IIASA, however, is the only one I know of with such a strong in-house research capacity in population and demography.

As both agents of change and affected by change, human beings are key to resolving the challenges of sustainable development, which is why population dynamics is explicitly represented in the IIASA research portfolio on global change.

At IIASA, the demographic research conducted by the World Population Program (POP) has far exceeded the discipline's conventional comfort zone. It has explored new directions that are exploiting the synergies between population and IIASA research on energy, land-use change, water, and air pollution. This is producing many innovative results. A good example is the research POP provided to the Shared Socioeconomic Pathways (SSPs) which were used as part of the research framework by scientists working on the 2014 Fifth Assessment Report of the Intergovernmental Panel on Climate Change. The SSPs continue to underpin the ongoing research of the integrated assessment modeling community (IAM) and the vulnerability, impacts, and adaptation (VIA) community.

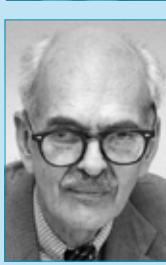
The scientific excellence and policy relevance of POP researchers are reflected in the impressive array of publications in *Science* and *Nature*. POP, in recent years, has also been awarded three grants by the European Research Council and represented IIASA at many high-level international forums.

IIASA is proud of this world-class program. Its innovative strength will be needed in the future just as much as in the past 40 years and, in many ways, even more. ■



### POP Directors

It was in 1975, under the leadership of [Andrei Rogers](#), that the first formal population research began at IIASA within the Human Settlements and Services (HSS) Area. From 1975 to 1983 the main emphasis of the research was on international migration, and it was during this period that IIASA became the cradle of multistate population analysis methods.



[Nathan Keyfitz](#) took over the leadership in 1984 and HSS became the Population Program—the abbreviation POP has been the trademark name of population research at IIASA ever since. During Nathan Keyfitz's ten years of leadership, POP, though small in size, had a large impact. It was one of the few research programs to systematically study the possible impact of population aging. This included path-breaking work on population heterogeneity and mortality by James Vaupel and Anatoli Yashin. Keyfitz himself laid the foundations for the probabilistic population projections that POP was later to produce. He was also one of the first demographers to seriously study the relationships between population and the environment, which put IIASA at the forefront of the scientific analysis of these complex interactions.



[Wolfgang Lutz](#) has led the Program since 1994. The research group was renamed the World Population Program in 2004 to show the core research focus on global population dynamics. As Program Director, Wolfgang Lutz has followed in the tradition of Andrei Rogers and Nathan Keyfitz. His work on probabilistic population projections—and later in adding "education" to "age" and "sex" as the traditional demographic characteristics studied in population dynamics—has altered the way scholars look at projections of future populations. Under his leadership POP laid the basis for IIASA

research on the interactions between population and energy, air pollution, and, more importantly, climate change, with an emphasis on the role of population heterogeneity.

Since 2011 POP has been part of the Wittgenstein Centre for Demography and Global Human Capital, a collaboration between IIASA, the Vienna Institute of Demography (VID) of the Austrian Academy of Sciences, and the Research Institute on Human Capital and Development of the Vienna University of Economics and Business (WU). This was made possible by the Wittgenstein Award 2010 given to Wolfgang Lutz by the Austrian Science Fund (FWF) and the Austrian Federal Ministry of Science for his outstanding scientific achievements. It was the first time that the award was given to a social scientist. ■

## Reflections of Former and Current POP Staff and YSSP



**Marilyn Brandl**  
POP Administrative Assistant 1990–2011

I had the privilege of working in the IIASA World Population Program (POP) as administrative assistant under the leadership of Nathan Keyfitz and Wolfgang Lutz. I was fortunate to be able to work with the crème de la crème of the international demographic community and I forged many friendships from around the world that continue today, even after my retirement. POP does important, state-of-the-art research and I was very lucky to be part of this illustrious group of researchers. I look back with fond memories—I couldn't have asked for a nicer group of colleagues. Congratulations to POP on its 40th anniversary and best wishes for the next 40 years!



**Luis J. Castro**  
President of the Municipal and Urbanistic Commission  
of the Academy of Engineering of Mexico;  
Deputy General Director of Mexico–USA Affairs,  
National Ministry of Foreign Affairs, Mexico

POP Researcher 1977–1982

I came to IIASA at the invitation of Andrei Rogers who had been my teacher and dear friend at Northwestern University (NU), Evanston, Illinois. This opportunity also gave me the privilege of being the first Mexican at IIASA, even though Mexico was not a member of the Institute at that time.

My research focused on developing models of migration by age-specific profiles and engaging in the multiregional population projections of IIASA member countries within the Human Settlements and Services (HSS) Area. I already knew Jacques Ledent and Frans Willekens, NU alumni, and made new very dear friends. Martha and Erich Wohlwendt treated my wife Cristina and me and Rodrigo and Bernardo, our children, like their own family.

In 1978 my old friend Donald Colosio joined HSS on my recommendation. As soon as he arrived he started his PhD dissertation on urbanization in Mexico by developing a general equilibrium model on which I also collaborated, contributing the component on models of rural–urban migration.

I left IIASA in 1982 to continue my research on migration at the Population Division of the United Nations in New York. The Division is currently using the Castro and Rogers Model Migration Schedules (UN Population Bulletin paper "What the age structure of migrants can tell us") to make international migration assumptions within their national population projections.



**Andrew Foster**  
Professor, Brown University;  
Director, Population Studies and Training Center

POP YSSPer 1985; POP Researcher 1986

The Young Scientists Summer Program (YSSP) has undoubtedly helped to develop many young minds in its 40-year history, but I am guessing that I am the only one who actually had his skull altered. During a Saturday walk on a nearby ridge I slid down an icy patch and hit my head on a rock. I was evacuated by helicopter and spent a couple of weeks in the hospital with a crack down the side of my head. Fortunately, my YSSP friends brought me my Compaq luggable and I was able to continue my work. I fondly remember Vaupel's enthusiastic lectures on unobserved frailty and the elegant mathematics in Yashin's most recent papers. The contour maps of vital rates we created mixed with tools learned as an engineering undergraduate produced two of my first demographic publications. The passion for integrating methods from different

fields and for using simple models to interpret complex data that was cultivated at IIASA has been the foundation of my work as a development economist and director of Brown's Population Studies and Training Center.



**Anne Goujon**  
Senior Research Scholar and Research Group Leader,  
Wittgenstein Centre for Demography and  
Global Human Capital (IIASA, VID/ÖAW, WU)

POP Researcher 1994–present

I joined POP in 1994 as a research assistant. I was lucky to find this job in that I came from the development community not knowing much about demography but needing a job in Austria. I sent a blind application letter to Human Resources—which I wish I could read again—who shared it with Wolfgang Lutz, the newly appointed POP director, who asked me for an interview and thereafter hired me. On the day of the interview I entered the wrong office and found myself face to face with Nathan Keyfitz who was still working in POP at the age of 80. I did not know it at that time but I had just met the god of mathematical demography! During my first few months, I was very intimidated by the whole IIASA and POP setting. I remember the heated discussions at lunchtime which started in English (for my benefit) but always changed to German when they became serious: I did not expect so much disagreement about population issues. I remember the first large meeting organized in June 1996 about rethinking population projections where most of the stars of demographic research were present: from Joel Cohen to Jim Vaupel. This is a constant in my experience with POP: the ability to bring together high-level scientists and involve them in our research. In the 1990s POP was still a small group. When funding started increasing in the 2000s research in POP intensified and the program became a real beehive: more projects, more people, more networks. For the best. Joyeux Anniversaire POP!



**Paul Kibuuka**  
Professor, College of Economic & Management Sciences,  
University of South Africa

POP YSSPer 1998

I joined IIASA in 1998 as a PhD student from the University of Pretoria in South Africa. I had entered the second year of my PhD research focusing on developing a dynamic probabilistic economic demography model to project the supply and demand of engineers on the South African labor market. I was ecstatic to learn that I had been selected because this was going to be the first time I had visited not only Austria but also Europe as a continent. Even more critical for me was the exposure to modern systems and techniques at the Institute.

I arrived in Vienna in the beginning of June with three fellow South Africans and thereafter met a number of other scientists from Asia, Latin America, USA, and Europe to mention but a few. I was given an attachment to Warren Sanderson, a very knowledgeable academic and a prolific expert in modeling. I chose a project and started work straight away alongside my PhD modeling and analysis. We finalized both and presented the results at a population conference held in the final week of the program.

I completed the doctorate the following year and thereafter progressed significantly in the Development Bank of Southern Africa to the level of managing director. As I write now, I have rejoined academia and have been appointed associate professor of economics at the University of South Africa. I'm grateful to my supervisors, family, employers and last but not least Wolfgang Lutz for the opportunity. May God bless all the alumni(æ).

## Vinod Mishra

Chief, Policy Section, United Nations Population Division, Department of Economic and Social Affairs

### POP YSSPer 1994

Thinking about my time at IIASA as a YSSP participant more than 20 years ago brings back memories of a defining experience. As a graduate student, I was juggling with trying to understand complex relationships between population dynamics and environmental change. At the time, POP was probably the only institution in the entire world that had carried out a detailed case study of interlinkages between population, development, and environment using a systems approach. This is what had attracted me to apply for the YSSP. When I arrived at IIASA, I did not have a clear sense of what I would accomplish during those three summer months, but in my discussions with POP colleagues in the initial weeks I was advised to think broadly and systemically. This encouraged me to embark on a challenging project that resulted in my developing a broad conceptual framework and outlining a generalized theory for understanding population, development, and environment relationships. During this time, I also managed to empirically test some of the hypotheses put forward in the proposed theory using cross-country data. This work was eventually published as a IIASA working paper. In hindsight, this seems like an overly ambitious effort for a summer project, but the encouraging environment and broad vision of POP colleagues made it possible. This experience taught me to think creatively, seek challenge, and not be afraid in exploring new frontiers.



## James Raymer

Professor of Demography  
Director, Australian Demographic and Social Research Institute,  
The Australian National University

### POP YSSPer 2002

I was a YSSP participant in 2002. It was during this time, following the suggestion of Warren Sanderson, my mentor in POP, that I began my innovative and ground-breaking research on modeling international migration flows among countries in the EU and European Free Trade Association. I was midway through the PhD program at the University of Colorado, Boulder, supervised by Andrei Rogers, and looking for an application to estimate migration flows. The topic of European migration presented a very complex but intriguing problem to solve. I used the resources in the IIASA library to get started on the literature and later managed to make contacts with some key migration experts at the Netherlands Interdisciplinary Demographic Institute who provided me with the most recent data. I continued this work for another ten years, first as a major component of my PhD and later through two funded research projects when I was at the University of Southampton. My experience at IIASA was absolutely amazing, and resulted in an international network of colleagues that I am still in touch with, not to mention my future wife (from the IIASA Forestry Program) and our subsequent three girls of whom we are very proud.



## James W. Vaupel

Director, Max-Planck Odense Center on the Biodemography of Aging, Odense, Denmark

### POP Researcher 1981–1985

It was at IIASA that I became a demographer. I published my first paper in *Demography* in 1979 (on hidden heterogeneity). In three years at IIASA, spread out between 1981 and the end of 1985, I was very fortunate



## Babette Wils

Independent Consultant

### POP Researcher 1987–1995 and 1998–2001

**WL** Babette, what were your first impressions when you came to IIASA to work as a research assistant? I remember well that before joining IIASA you lived on a Greek island designing clothes.

**BW** It was an impression of enormous openness and trust. I did have some economics background but I had no experience in the kind of work that I was expected to do in the IIASA World Population Program (POP). I had never programmed before, but you gave me a chance to try it and I managed to do it OK. This was wonderful for me. It is great that you were willing to take a bit of risk—I saw this many times at POP.

**WL** Well, you had indeed a very steep learning curve in programming and quantitative modeling. You also went deeply into systems modeling. This also became the topic of your dissertation.

**BW** When I joined POP it was oriented toward regular demographic work. We worked on aging and did a paper on modeling divorce. But then you got these big grants from the UN Population Fund and the EU to do case studies to understand how population changes interact with the economy and the natural environment. It was a much more holistic approach that we called Population–Development–Environment (PDE) modeling. It was very exciting to be part of that. Just take the Mauritius case study where we tried to delve so deeply into one specific place to understand all the important aspects that matter for its development in a comprehensive way. One of the things that we found was that education was a key aspect of driving development in a good direction.

**WL** What are you doing today and how did IIASA influence your further career?

**BW** Today I work with UNICEF, UNESCO, and the World Bank in developing countries on education planning. This involves costing, the analysis of barriers and hurdles and the study of different scenarios of education expansion. But I primarily look at education with the eye of a demographer which implies a longer-term perspective and a focus on differences between population groups. This is something the education community really needs. What I learned at IIASA has entirely determined my approach and my work. Now I try to bring this approach to developing countries in a more applied way that has some tangible impact on the ground. ■

*Interview by Wolfgang Lutz*

to be able to work with Andrei Rogers, Nathan Keyfitz, Anatoli Yashin, Brian Arthur, Michael Stoto, Wolfgang Lutz, and other IIASA scholars; guests such as Graziela Caselli, Jacques Vallin, Kenneth Manton, and biodemographer James Carey; and YSSPers such as John Wilmoth and Yi Zeng. As Founding Director of the Max-Planck Institute for Demographic Research in Rostock, Germany, and Director of the Max-Planck Odense Center, I think about IIASA almost every day and try to make decisions that will help us emulate the creative research environments that made population research at IIASA so stimulating and important. ▶



### Warren Sanderson

Professor, Departments of Economics and History, State University of New York at Stony Brook

POP Researcher 1980–present

**TH** Warren, you joined IIASA in 1980, and this year is a personal jubilee for you: 35 years with the IIASA World Population Program (POP). Going back, what was POP like in 1980 and how was it different from now?

**WS** I first came as a visitor for two weeks in 1979. It was during the Cold War. And one of the striking aspects of IIASA at that time was the importance attached to bridging the Cold War gap. It was not an easy thing to do. It took a lot of work, a lot of personal interaction between the people from the East and West. So that is probably the most notable difference. Andrei Rogers was POP director at that time. He was excellent at bridge building. Among other things, he spoke "old-fashioned" Russian and all the Russians coming to the Institute used to go to Andrei to hear him speak "pre-Revolutionary" Russian. It was a fun tool for breaking the ice between people.

Initially, in the 1980s the focus of POP was migration. One of our series of publications was on migrants in Germany and specifically in Berlin. We had a problem with what to put on the cover: how would we show Germany linked to Berlin? Should we show it belonging to the West or the East? This was difficult until someone found a beautiful graphic that was ambiguous, that pointed from the East to the West and there was no way of telling which was which. But these Cold War issues were very important in those days.

Andrei had, I think, a very good nose for people. (I don't want to be immodest here!) He brought Allen Kelley to POP, and Jeffrey Williamson was here for a while. Donaldo Colosio, too, a very important Mexican politician, wrote his PhD dissertation two rooms away from where we are doing this interview.

To me, IIASA has always been a very magical, wonderful place. Working at POP feels like coming to my intellectual home, finding a place in the world where I belong. My work has always been interdisciplinary. And that hasn't always fitted so easily in other places. But here interdisciplinarity and their interactions have always been natural. This is a place where I'm welcomed, accepted, and understood.

**TH** You've been observing POP—from within and also from a distance—for a long period of time: what are the main features of the program's "evolution"? What has stayed and, perhaps, should stay unchanged?

**WS** Of course, specific subjects, topics, are changing. But I think there is a tremendous amount of freedom and encouragement within the framework of what IIASA/POP does. In that sense a lot of it has stayed the same. We've studied different things in different years, but I'm still coauthoring articles with the same people I wrote with decades ago. On different topics, of course. But that's a rare thing to be doing, and it's also very pleasing. I think the important thing about IIASA and POP is the respect shown here: the way that, as long as you are consistent in doing your research and you produce things, you are supported. In some places, especially academic environments, it's too competitive.

There is also continuity: Sergei [Scherbov] and I are working on aging. One of the pioneers of work on aging was Nathan Keyfitz. He did spectacular work years ago in the 1990s. Nobody took it seriously at that time. Now we are continuing this work, though in

a different form. Sergei and I have also written a series of articles in which we have shown that conventional measures of age and aging provide biased indications of the severity of the problems of population aging. Our new approach to population aging is being adopted more and more and was recently used in a widely read World Bank report.

**TH** To you, what are the greatest contributions made by POP scientists to demographic science and, more broadly, to the global sustainable development agenda?

**WS** Our past research, projecting that world population growth was coming to an end, was very important. Although some people claim it's still controversial, it isn't any more.

Also what Wolfgang [Lutz] did with education was truly amazing. He didn't get much support from anybody but he managed to combine resources to produce something remarkable: education-specific forecasts and more broadly the recognition of education as an important demographic variable. It's an amazing contribution in terms of scale. I don't know anyone else with the intellectual and leadership capacities to have organized such a project. I was around when the research on education was just a gleam in Wolfgang's eyes—and now he's done it.

**TH** The Young Scientists Summer Program (YSSP) is a very special feature of IIASA, and you've been a part of it from the very beginning. How do you perceive this program, its value for young scientists, and its value for POP?

**WS** POP has had extraordinarily successful YSSPs. One former YSSP is now chairing the department of demography in Berkley University in California, which is one of the best departments of demography in the world. He was here, and we helped train him. And we have a lot of people in important jobs around the world. Most of them have also contributed back to us. This is a one-of-a-kind program in the world.

The idea of IIASA is to integrate scientists that they can discuss things across the big scientific divides. You can do this with working scientists or, better, you can encourage these discussions within the younger generation of scientists like those who come to YSSP. That's when you can really have an influence. In the Cold War days, things were, of course, different, culturally. There was a lot of ideology. My wife did English language training and conversation training for YSSPs from Eastern European countries. We got to know them very well and it was very successful. The YSSP is still very successful in the sense of integrating people across countries, but the cultural differences now are much, much smaller.

**TH** How do you see the future of POP? POP in 10 or 20 years?

**WS** My hope is that we will still be here, in the same wonderful rooms, and that we will continue to study exciting new demographic phenomena. There will be surprises, but the nice thing is that we are able to deal with surprises. We have a certain kind of flexibility, which is great. We are not a program that studies "X" and if "X" is not important, we become irrelevant. We have ability to focus on important things and when they change, our focus can change as well.

**TH** So to sum up, Warren?

**WS** As I said, POP is magic, but that magic cannot be defined in a specific way. The wonderful people and the warm supportive environment make work a joy there. When I tell people that I spend my summer holidays working at POP, they often tell me that I am crazy. But that is the nature of magic and I remain bewitched. ■

Interview by Tatyana Haplichnik



**Anatoli Yashin**  
Research Professor,  
Duke University

**POP Researcher 1981–1986**

My work at IIASA substantially influenced my life. I joined POP in August 1981 when Andrei Rogers was the Program director. I was impressed by the scale of the research problems addressed here, the enthusiasm of IIASA researchers, the modern research facilities, the creative atmosphere, and the friendly and highly professional IIASA administrative personnel. Andrei drew my attention to the Vaupel et al. (1979) paper on population heterogeneity. At IIASA our work with Jim Vaupel was begun and continued for decades. Together with Jim we organized the first Population Program Summer School for young demographers at IIASA. It was a wonderful time! Many students of the school are now among leading world demographers. Nathan Keyfitz, who replaced Andrei Rogers as the Program director, encouraged me to work on several aspects of survival analyses under incomplete information. I met Ken Manton from Duke University at IIASA, and we collaborated for a long time with him and Eric Stallard (also from Duke) on dynamic aspects of hidden heterogeneity. This work created a solid background for getting NIA/NIH funding for studying genetic and nongenetic determinants of the connections among aging, health, and longevity. Thanks to IIASA I have many friends and research collaborators around the world.



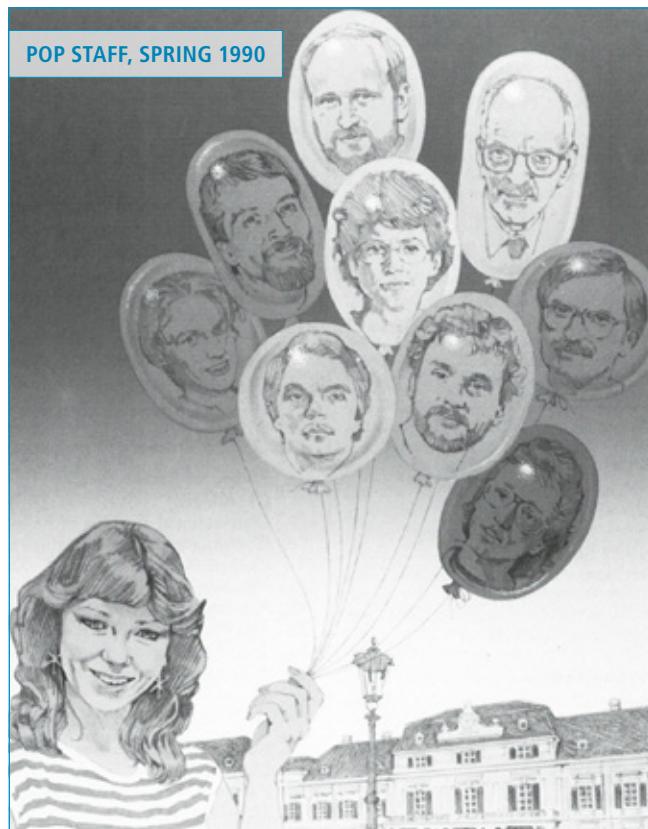
**Yi Zeng**  
Professor, Center for Study of Aging and  
Human Development, Duke University and  
Peking University National School of Development

**POP YSSPer/Researcher 1985**

I first visited IIASA as a member of the YSSP in 1985. Then, under the leadership of Nathan Keyfitz and James Vaupel, I was very lucky to be invited to extend my visiting research at POP for one additional month. I really learned a lot from Nathan Keyfitz, James Vaupel, Anatoli Yashin, and my YSSP classmates including John Wilmoth and Andrew Foster et al. I truly enjoyed the great atmosphere of solid/frontier scientific research and family-like friendship at POP. My first English peer-reviewed publication was initialized and completed with the supervision/collaboration of Vaupel and Yashin as well as helpful

comments from Keyfitz. The paper "Marriage and Fertility in China: A Graphical Analysis," coauthored by Zeng, Vaupel, and Yashin, was quickly published by *Population and Development Review* at the end of 1985.

Another life-time memory of POP is that my YSSP classmate Andrew Foster and I received the Dorothy Thomas Prize of the Population Association of America (PAA) at the same time in 1987, just two years after our wonderfully productive and enjoyable summer at IIASA, which not only helped Andrew and me to produce our papers to win the PAA prize but also remarkably benefited our professional careers. Thanks so much for POP and YSSP!



## HIGHLIGHTS OF THE SHIFTING POP RESEARCH AGENDA

Years refer to the main period of work

Human capital reconstructions and projections **2005**

New approaches to the study of population aging **2004**

Population–Development–Environment (PDE) interactions **1987**

Probabilistic population projections **1985**

**2011**

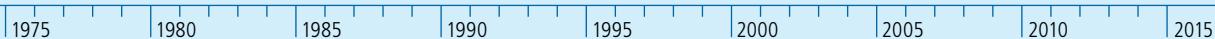
Demographic effects of unobserved heterogeneity **1981 1986**

**1975**

**1983**

Multiregional/multistate demography

Over the years the POP research agenda has moved into the direction of increasingly adding applications to the development of methodological innovations. Stimulated by IIASA's work on global environmental change and its interdisciplinary research environment, the analysis of Population–Development–Environment interactions has become a trademark of POP work. Similarly, the explicit consideration of population heterogeneity and a global focus have characterized POP work over all four decades.



# Wittgenstein Centre Data Explorer

## Version 1.2

*A more user-friendly version of this online data explorer, developed by population researchers at IIASA and the Wittgenstein Centre (IIASA, VID/OeAW, WU), is now available with data for all countries by age, sex, and education for 1970–2100*

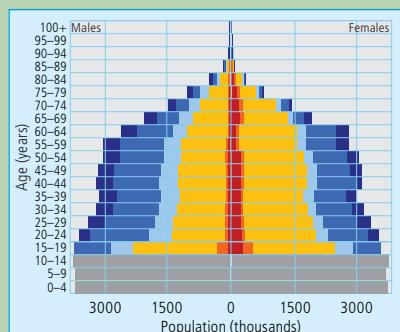
In 2014 IIASA's World Population Program scientists, in partnership with researchers from the Vienna Institute of Demography (VID) of the Austrian Academy of Sciences under the umbrella of the Wittgenstein Center for Demography and Global Human Capital (IIASA, VID/OeAW, WU), published the Data Explorer. This allows users to browse, select, visualize, and download projection assumptions and results for the population of all world countries (195) by age, sex, and education for alternative scenarios from 2010 to 2060 with extensions to 2100, based on a half-dozen scenarios. The Data Explorer also includes indicators related to fertility, mortality, and migration.

The data was designed using R+Shiny and can be consulted online or downloaded into a file (CSV) that can also be read using the software. The Data Explorer includes graphical representation in the form of dynamic pyramids and maps, and users can access links to country profiles and the relevant meta-data for more details.

The new features of the Data Explorer Version 2.1 are:

- a new, more user-friendly interface;
- new back-projections for populations by age, sex, and six levels of education from 2010 to 1970;
- the graphic explorer within the new interface allows comparison of population age and education structures across countries/regions, scenarios, and time.

The global population projection exercise has been documented in an Oxford University Press book by Lutz, Butz, and K.C. (Eds) entitled *World Population and Human Capital in the 21st Century* and can be accessed at [www.wittgensteincentre.org/dataexplorer](http://www.wittgensteincentre.org/dataexplorer)



## Wittgenstein Centre Website Relaunch

The Wittgenstein Centre for Demography and Global Human Capital is pleased to announce that its website will be relaunched in September 2015.

Based on practical advice from users and professionals, we have redesigned and reorganized our website. The new website represents our changed internal structure and navigation is now clearer. We have also taken care to present our research in an attractive and interesting way. We will be continuously updating our web space to keep you informed about events, news, our staff, and our products.

Looking forward to seeing you there.

[www.wittgensteincentre.org](http://www.wittgensteincentre.org)

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IIASA

International Institute for

Applied Systems Analysis

A-2361 Laxenburg, Austria

Telephone: (+43 2236) 807 0

Fax: (+43 2236) 71 313

Web: [www.iiasa.ac.at](http://www.iiasa.ac.at)

E-mail: [popinfo@iiasa.ac.at](mailto:popinfo@iiasa.ac.at)

Managing Editors:

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Energy & Climate Change, Food & Water,  
Poverty & Equity.

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