

RSAI NEWSLETTER

THE REGIONAL SCIENCE ASSOCIATION INTERNATIONAL

new series 20 - May 2021

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FROM THE EDITOR



The newsletter of the Regional Science Association International (RSAI) appears two times a year and contains information about upcoming conferences and meetings, recent events and publications, and short contributions on current themes.

The editorial team has an open position! I (Martijn) would very much appreciate a second pair of eyes to help with both the gathering of contributions, and the proofreading of the final product. Applications from the global South or from those with a good range of contacts there would be particularly welcome, as would being a native speaker of English. Please contact me at m.j.smit@uu.nl by Friday 23 July 2021 if you're interested, enclosing a CV and a half-page statement of purpose, indicating why you feel you're a good fit for editing the newsletter and how involved you have been and plan to be in RSAI and its supranationals. Andrea Caragliu, the Executive Director, and the remaining editor will decide together.

Text contributions for the newsletter are always welcome, and can be submitted directly to Martijn Smit (m.j.smit@uu.nl). Deadline for the next issue is 15 October. In particular, short contributions on your current research are most welcome, as well as proposals for a piece in the *Center of Excellence* series.

Martijn Smit
Utrecht University, the Netherlands

RSAI MEMBERSHIP INFORMATION

All RSAI members have online access to Papers in Regional Science (PiRS) and Regional Science Policy and Practice (RSPP): journals of the Regional Science Association International. Members will need to log in to access full text articles online.

In addition to the RSAI publications, members are offered an opportunity to purchase other regional science journals at reduced rates and participate in the national and international conferences at reduced rates.

For details on how to become a member, contact the Executive Director, Andrea Caragliu at andrea.caragliu@polimi.it, or visit www.regionalscience.org.



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WELCOME

Dear Members of the RSAI Community,

THE TIME FOR the 2021 RSAI World Congress has arrived! Organized by the Moroccan Section of the RSAI, the World Congress will be a major international forum for researchers and policy-makers in the field of Regional Science across the world, focusing on today's most challenging issues. This edition of the event will bring together more than 500 participants from 53 different countries. The papers cover all major areas of the field, with applications for a wide range of regions in the globe. I am particularly pleased with the high participation of young scholars from the Global South.

Since we have decided that the congress would run 100% online, many colleagues from the Association have joined us in an extraordinary effort to organize a high standard, inclusive, online event. I take this opportunity to extend my sincere gratitude and appreciation for the hard work and dedication provided by all of them. Special thanks go to former RSAI President, Mark Partridge, who initiated this adventure, and Abdellatif Khattabi, Andrea Caragliu and Elisabete Martins, who made it happen!

Going online has shown to bring us some opportunities. Counting on the invaluable help of the leaderships across our four supranational sections, we have reached out every single national section and invited them to propose special sessions dedicated to their countries/regions. We have received positive responses from almost all sections. This is really invigorating and motivating, further developing the sense of community belongingness that may motivate a larger number of young regional scientists to engage more broadly in the Association. We now have the opportunity to have a truly global congress, with the participation of many of RSAI sections.

Going online has also made possible a wider participation across the world, allowing the organizers to minimize the number of competing sessions, to allocate time slots with time zones in mind, and to reduce drastically registration fees.

This World Congress will be a unique opportunity to showcase some of the exceptional work regional scientists are doing all over the world. In the coming days, we will all have the opportunity to grab a big picture of our Association,



being exposed to different topics and approaches people are using across the world. We will also have the opportunity to welcome many groups of regional scientists located in countries where no national section of the RSAI is to date present. Supported by donations from Geoffrey Hewings and Fipe, a Brazilian think tank, we were able to organize special sessions, and invite scholars from such countries as Angola, Egypt, Lebanon and Paraguay.

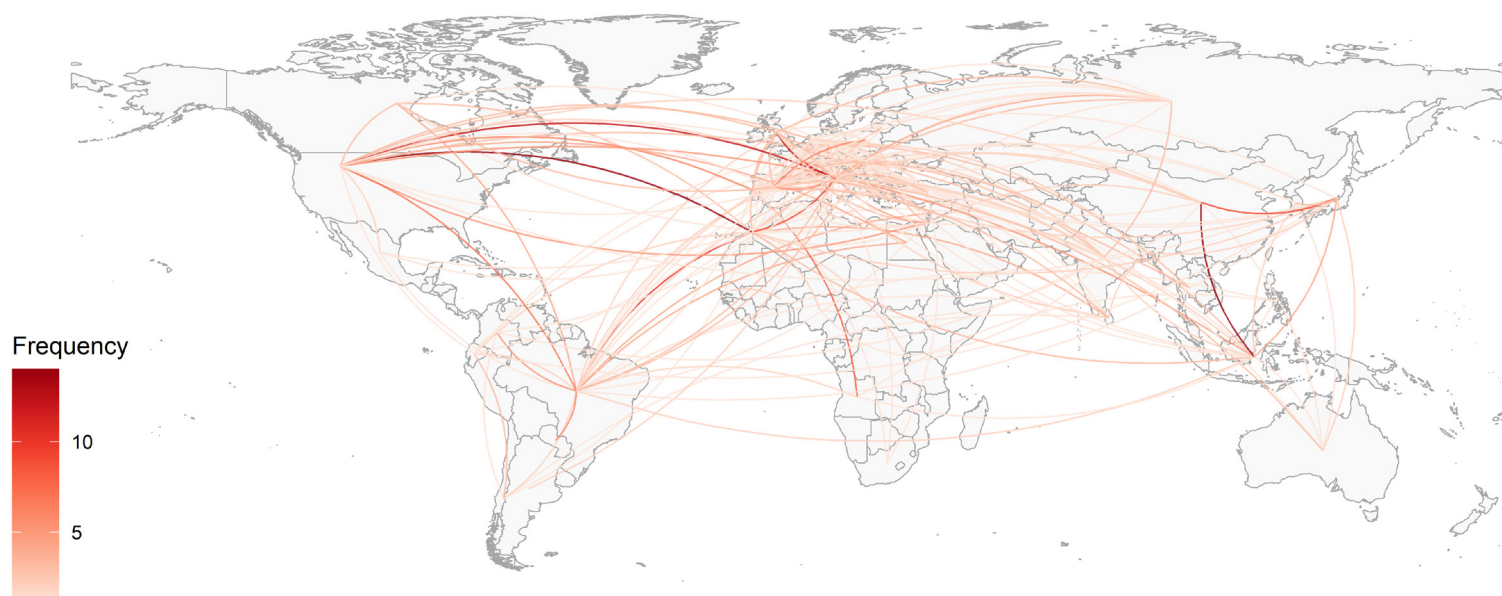
This edition of the World Congress will also be a digital agora for exchanging ideas, a virtual place of strong networking. The figure below summarizes the intensity of co-participation for authors presenting papers accepted to different sessions of the World Congress, suggesting a high propensity of exchange of ideas among regional scientists all over the world. As envisioned by my dear friend Andrea Caragliu, RSAI Executive Director and one of the organizers of the 2021 RSAI World Congress, "beyond the pre-existing networks, we wish this Congress to be an opportunity for all of us to open new nodes, and further diffuse our discipline". From an institutional perspective, this "picture" reveals there are opportunities for laying down strong foundations for RSAI future developments in strategic regions where the Association is still not present, in addition to promote and consolidate our presence in countries and regions where sections already exist.

On behalf of the Regional Science Association International, the Local Organizing Committee, and the Scientific Committee, I would like to thank our sponsors (Fipe, Nereus, PCNS, UM6P, Wiley, Geoffrey Hewings), our partners (NARSC, ERSa, PRSCO, LARSA, Regional Science Academy, ENA, CAU, UMVR), and all participants for joining us at this historical meeting, and for sharing their experience, research and views with our community. Their participation and commitment to RSAI are very important and truly appreciated!

Please receive my best wishes and enjoy this edition of our Newsletter!

Eduardo Haddad

RSAI President



ROGER R. STOUGH OUTSTANDING MENTOR AWARD

PROFESSOR DR. PETER Nijkamp is the 2020 recipient of the Roger R. Stough Outstanding Mentor Award. He is the first awardee for this recognition. Nijkamp is an emeritus Professor in regional and urban economics and in economic geography at the VU University, and associated with the Open University (OU), Heerlen (The Netherlands), Alexandru Ioan Cuza University, Iasi (Romania), Royal Institute of Technology (KTH), Stockholm (Sweden) and A. Mickiewicz University, Poznan (Poland). He is a member of editorial/advisory boards of more than 30 journals. He is also a fellow of the Royal Netherlands Academy of Sciences, and past vice-president of this organization. He has served as president of the governing board of the Netherlands Research Council (NWO). In 1996, he was awarded the most prestigious scientific prize in the Netherlands, the Spinoza award. In addition, he is a Fellow of the Regional Science Association International (RSAI). Professor Nijkamp holds a Ph.D. (cum laude) from the Erasmus University in Rotterdam on new solution methods for non-linear mathematical programming models for industrial planning.

Professor Nijkamp has been an excellent role model of, one of the biggest supporters to, and an exemplary mentor to students and early career professionals. He has always made himself available to students and junior colleagues within and outside of his own institutions, from a wide range of academic disciplines, and at various stages of their careers. Professor Nijkamp is known and greatly appreciated by many for his continued support and mentoring after students' graduation and during their career development. In addition to offering financial and academic support, Professor Nijkamp has provided students and early career colleagues invaluable access to the regional science community in Europe, North America, Asia, and Latin America. He has been instrumental in broadening student participation in professional meetings with open arms welcoming new, often younger, students and faculty and welcoming new ideas and initiatives. Professor Nijkamp is especially keen to students and early career faculty from emerging countries and regions where the field and community of regional science are less developed and known. His leadership and contribution in supporting and championing for students and in broadened and inclusive participation in the regional science community are without limits.

Professor Nijkamp is widely cited. As of early November 2020, Professor Nijkamp has accumulated over 17,000 citations in Scopus and over 69,300 in Google Scholar. According to the RePec list, he is among the top 30 of well-known economists worldwide. Professor Nijkamp has published more than 2,000 scientific articles in the international literature, and over 40 monographs and 100 edited volumes.

The North American Regional Science Council is therefore pleased to present the inaugural, 2020 Roger R. Stough Outstanding Mentor Award to Peter Nijkamp. Congratulations!

For a complete overview of NARSC Awards and Prizes, see <http://www.narsc.org/newsite/awards-prizes/narsc-awards-prizes/>

INTERVIEW WITH PETER NIJKAMP

Q: How did you get to be where you are now?

A: I am a privileged person. Born under poor circumstances in the difficult post-WW II period, I was not predestined to become an academic. And in the periphery of the country where I grew up, a university was an unknown

phenomenon and at best something for elite children in the big city. A job as a carpenter or a plumber would have been a more natural future for me. But I had the great fortune to have an emancipated female teacher who strongly advised my parents to send me to a school for higher education. Her argument was really convincing: if this boy does not have a real challenge, he will become lazy!

Q: And she kick-started your university career?

A: All over my life as a youngster, I received support and encouragement from many people, during my gymnasium period, during my life as a student at the Erasmus University in Rotterdam (thanks to 'grand-master' Jan Tinbergen), and later on as a PhD student (thanks to Leo Klaassen and Jean Paelinck). And later on, during my long career at the Free University and the Tinbergen Institute in Amsterdam, I received heart-warming and unforgettable support of so many colleagues, which was entirely undeserved.

Q: When did your eyes open to the international field of Regional Science?

A: When I attended my first Regional Science conference (London, 1970), I met with Walter Isard, Dave Boyce, Alan Wilson, Allen Scott and many others. And I was so lucky to enjoy their great collegial company and great minds. They shared freely with me their ideas and offered me so much, including new challenges all the time. They helped me in finding my way on the capricious roads to an academic career.

Q: However, the Stough Award is not about you being guided by others, it is about the guidance and mentoring you have provided to the next generations.

A: Most of all, I owe my scholarly ability to my students and young colleagues, not only in the Netherlands but over the entire world. I met poor students from developing countries, I met arrogant students from rich parents, I met failing and successful youngsters from all over; but in all cases, I learned from them: they were my source of critical thinking and creative ideas. A university is not a collection of grey-haired scholars; it is a self-organising place where young people torture their brains and share ideas.

Q: How do you see the relationship between mentor and student?

A: I have always felt that young people are the escalators of new knowledge. And I have only tried to polish a little bit their nice ideas and sometimes also their immature thoughts. That mission has brought me all over the world, and any trip meant an added value to my (limited) cognitive ability. Whatever I have personally developed as new concepts, theories or models in regional science, is the result of input of others. So I owe the regional science community so much; it has been the best fortune in my life to find this great community. It provided for me a great international network of passionate scientists, and that has been of critical importance in my academic life.

Q: What would be your advice to others who aspire to become good mentors?

A: It is critical for any (PhD) student to find a great supervisor. It is equally critical for a supervisor to find a great PhD student. Such a great student is not necessarily always the smartest; everyone deserves a fair chance. So, given my early history sketched out above, I have always tried to return the courtesy to the young generation. Service provision to the next generation is the prominent duty of any scientist. This has by far the highest benefits for society and young academics. And therefore, I am so grateful to have received the Roger Stough Award for excellent mentorship; he was an example for many of us and he was for me the best mentor ever.



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CENTER OF EXCELLENCE IN REGIONAL SCIENCE: CALCUTTA

As many of you may have found out during the 12th World Congress at Goa, the Indian Regional Science Association is a heritage in itself. Having been initiated by Prof. C.R. Pathak at the Department of Architecture and Regional Planning at IIT Kharagpur, when Prof. Walter Isard attended the International Regional Science Conference in 1967. IIT is located just 135 kms from Calcutta (now Kolkata) and the affinity was already there! It was only a matter of time that RSA India moved to Kolkata and closer to the University of Calcutta. Prof. Pathak taught at the Department of Geography and was deeply involved in its programs. Decades later, today the Department is home to the Regional Office of RSA India.

The University of Calcutta is the bearer of a more profound history and heritage – it was founded in January 1857, established by the then Governor General of India, by adopting the pattern of University of London, and became the first University outside east of Europe to teach European Classics and Philosophy, Indian Philosophy, Occidental and Oriental History. Its first Vice Chancellor was James William Colville, and Sir Asutosh Mookerjee was the second Indian Vice Chancellor (Prof. Gurudas Banerjee being the first) who made impactful strides during his extensive term. The journey of Indian academic institution-building began here: the first medical school of Asia in 1835– followed by many firsts – a Science College, the first womens' college, the first Blind School, the first University Museum to name a few. Here graduated the first Indian women, Chandramukhi Basu and Kadambini Ganguly, fighting rigid social barriers of a male-dominated academic world, and encouraging generations of women. Renowned Indian scientists, S. N Bose, P. C. Mahalanobis, Meghnad Saha, Prafulla Chandra Ray, Jagadish Chandra Bose created the rich scientific temper of India, inspired the world.

Rabindranath Tagore, renowned litterateur, Professor of Bengali at this University received the Nobel Prize in Literature in 1913, and delivered the Convocation address in Bengali for the first time – it was 1937. Chandrasekhara Venkataraman, Professor of Physics was a Nobel Laureate in Physics in 1930. Swami Vivekananda and Netaji Subhash Bose are alumni. Steeped in history, the institution holds on to its ranks, now understood in a different language of QS and NIRF Rankings!

Built in 1872, the Senate Hall was the first example of exemplary architecture and its own campus! Until then the Writers Buildings, built by the East India Company to house its administration, was used for University meetings as well.

Today the University has fourteen campuses including a 67 acres experimental agriculture campus and a picturesque Rowing Club. Recent additions to campuses are the Ionosphere Field Station and the Nanotechnology Campuses. These campuses are home to 23 Arts, 23 Science, 9 Technology, fine arts, music,

commerce, business Management and law Departments with more than 50 Chairs of Excellence, The Department of Geography is just one of them, a member of this heritage family, standing tall but often struggling with limited resources and myriad constraints, typical of a State University. It was founded on 9 August, 1941 under the able academic leadership of Professor Siva Prasad Chatterjee.

Since the introduction of the Post-Graduate Course, the department has been able to diversify its teaching and research activities in various branches of Geography – general theoretical as well as applied. The department offers as many as ten areas of specialization to the students, namely: Geomorphology of Humid Tropics, Soil Geography and Land Use, Environmental Geography, Regional Planning, Urban Geography, Advanced Industrial Geography, Geography of Tourism, Advanced Cartography, Climatology of the Humid Tropics and Geography of Culture and Heritage.

The collective focus of the Department has shifted substantially over the years towards more applied as well as interdisciplinary teaching and research. It has incorporated contemporary issues and trends of research in each and every sub-theme alongside increasing focus upon state-of-art technology in surveying and Geoinformatics. In the field of Physical Geography, the shift has been from general to a region-specific focus upon the Humid Tropics. In the field of Human Geography, focus has been shifted to critical approaches and qualitative methods of research. Publication amongst faculty members and research scholars are increasingly towards this direction. A Seminar Library containing 12,659 books and 3,325 volumes of journals, is located in the Department, apart from the Central Library. Ongoing Projects are under the Department of Science and Technology, University Grants Commission, Pollution Control Board, Indian Council of Social Science Research, World Bank, UKERI – Newton Fund, University of Waterloo. We are an IIRS Outreach Centre for training students in RS-GIS. We have initiated the Kolkata Urban Observatory Programme under the UN Habitat University.

We have celebrated our Platinum Jubilee as aspiring regional scientists – our platinum celebrations took off in 2016 with the International Conference on Urban and Regional Sustainability and the success of this conference set the ball rolling for Regional Science per se. With the success of the 12th World Congress of Regional Science in 2018, the Department has taken up the responsibility of making inroads in research in regional science in both physical and human genres aimed at addressing the interdisciplinary meeting points, as geographers.

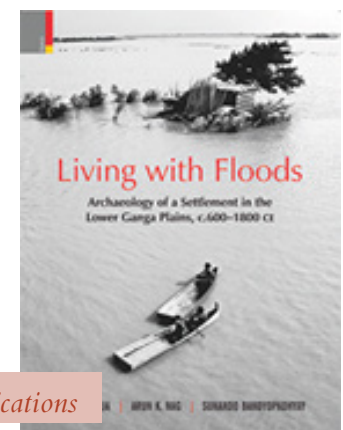
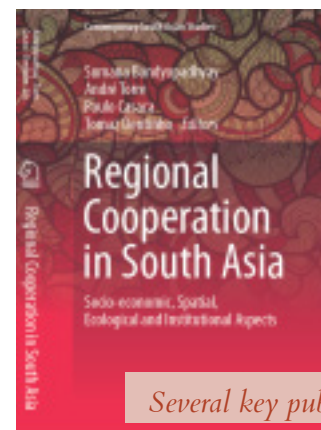
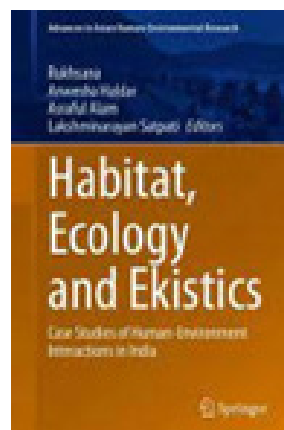
We are a small family here, with numerous vacant posts at the moment. Prof. Sunando Bandyopadhyay, an eminent geomorphologist leads the Specialisation on Geomorphology of the Humid Tropics, and is working on projects like



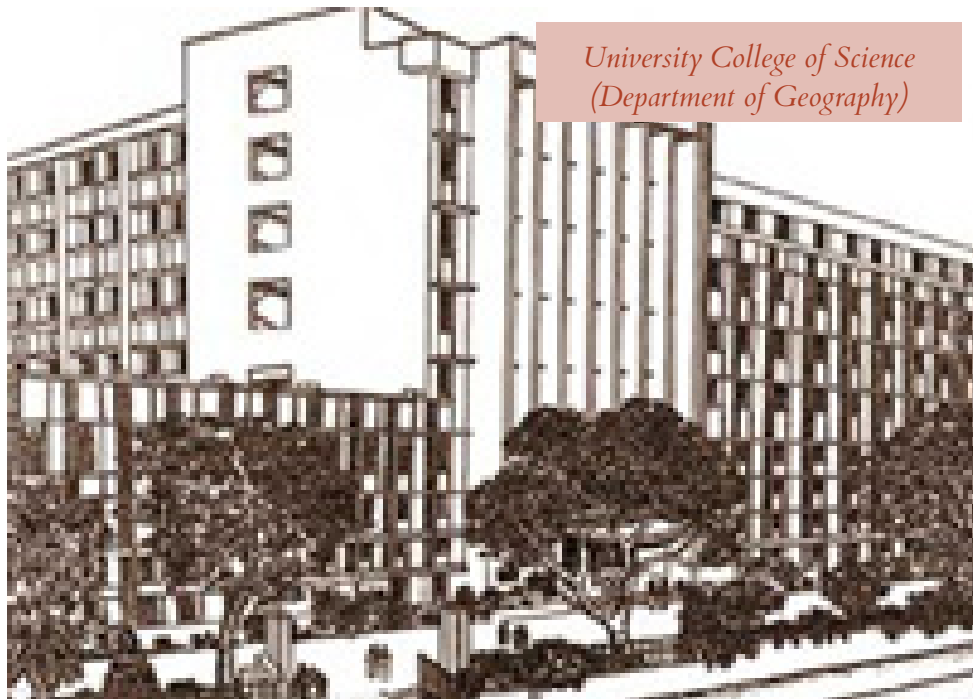
The Darbhanga Building



Department entrance (left) and freshly constructed Senate Hall (right)



Several key publications



University College of Science
(Department of Geography)

Recent Hydrographic Changes of The Hugli Estuary, West Bengal, and its Impact on the Socio Economic Environment; Evolution of the Ganga-Brahmaputra Delta: a Review; Anthropogeomorphology of the Lower Deltaic West Bengal, are some of the crucial investigations that have thrown light upon one of the largest delta systems of the world. Research in the Sundarbans, the largest mangrove site of the world is also pursued by Prof. Bandyopadhyay (Sundarban: A Review of Evolution & Geomorphology) Dr. Utpal Roy and I added to this major study from two crucial perspectives of the Human and Economic Geographers domains in a project funded by World Bank – coastal erosion-driven migration and issues of land access. Sunando's other exploration, *Living with Floods: Archeology of a Settlement in Lower Ganga Plains*, published by Primus Books is written in collaboration of Archaeologist Sheena Panja, has inspired researchers in the Department in interdisciplinary regional studies as a physical geographer. Prof. L.N. Satpati, an expert in Climatology, introduced the regional concept to the syllabus – he leads the group on Climatology of Humid Tropics – the regional identity of our field of research has crept into physical geography, a trend since 2010.

A young brigade stormed into the Department together after a long hiatus in fresh appointments – and have been energetically pursuing research in key regional perspectives – Dr. Lakpa Tamang in the Himalayan Region, Dr. Debasis Ghosh in the Rarh plateau region of Bengal and Dr. Mafizul Haque in the urban region of Kolkata, especially the deltaic wetlands. Dr. Utpal Roy works in the area of Health Geography, Population and Migration studies. I have been honoured to serve as editor for SADF in a series on Contemporary South Asian Studies with Dr. Paulo Casaca and Prof. Tomaz – we began with Regional Cooperation and moved on to Urban Sustainability, Water Issues, Railway Infrastructure and presently working on Housing in South Asia – the fifth book in the series.

Stalwart regional scientists have been constantly inspiring us – Prof. Peter Nijkamp, Prof. Andre Torre, Prof. Tomaz Dentinho, Prof. Mark Partridge, Dr. Karima Kourtit visited this Department to share their research and share precious moments with the students and researchers. Prof. Manas Chatterjee hosted a conference in this Department with a delegation of twelve eminent academicians of the Chinese Regional Science Association, including Prof. Bojie Fu, Prof. Kaizhong Yang and Prof. Xue Ling (Paul). All of them delivered Special Lectures in an RSA India collaborative celebration of the Department's Platinum Jubilee, and RSA's Golden Jubilee – through the year! In all endeavours, RSA India is supported by eminent Indian geographers

and regional scientists, Prof. C. R. Pathak, Prof. R.N. Chattopadhyay, Prof. Amitabh Kundu, Prof. Saraswati Raju, Prof. Ram Bhagat, Prof. Sachidanand Sinha, and the younger eminent scholars like Abdul Shaban (TISS), Anindita Dutta (Delhi University), Sarfaraz Alam (Benaras Hindu University) who inspires us – we, the officials of RSA India – myself, Prof. Santanu Ghosh as Secretary, Dr. Saptarshi Mitra, and Kanika Basu in charge of the Indian Journal of Regional Science (that never missed a volume since 1968, is delayed for the first time due to the pandemic!) are all striving to take RSA India to its place under the sun. Together we hope to take great strides in establishing regional science as the focus of our Department, and further inspire researchers and students in India.

Sumana Banerjee

ERSA/JRC WINTER SCHOOL 2021

ERSA JRC Winter School 2021 has been a revitalizing and enriching online experience. The format was people friendly and enabled discovering insightful research works and perspectives. They reflect both the diversity of community challenges and the potential of research for contributing to address global and local sustainability challenges.



The combination of academic lectures, JRC-led Laboratories and young researchers' presentations has supported original co-learning dynamics throughout the week. From my perspective, 'Smart Specialisation in the Global South', it has broadened the scope for awareness raising in Europe and within local academic communities; it has also shed light on promising avenues for international science and policy cooperation on Smart Specialisation and place-based approaches to sustainable transformations.

This first-time initiative should be encouraged to help fostering the collective creative dynamics that characterize our knowledge economies, even so in these challenging times for our science and policies.

Mafini Dosso

European Commission, JRC | unit B3 | twitter @MafiniDosso



THE ORIGINS OF REGIONAL SCIENCE

PART ONE OF A SERIES

BY PETER BATEY, RSAI ARCHIVIST



REGIONAL SCIENCE AS a field of study is widely acknowledged to have its origins in the late 1940s and 1950s and owes its existence to the herculean efforts of one man: American economist Walter Isard. Isard was deeply dissatisfied with the failure of his fellow economists to handle space in their deliberations and felt that, to remedy this, the rigorous analysis of cities and regions would benefit greatly from an inter-disciplinary approach that drew from other social sciences as well as from economics. He organized a series of informal meetings among regional researchers which began to sketch out the scope and content of a new field to be named 'regional science'. Isard emerged as a tireless advocate for regional science, first among economists, and later sociologists, geographers, planners, economic historians and political scientists. He was able to tap into a growing interest in regional problems, bringing with it a demand for innovative theories and techniques that might aid analytical understanding and assist in the making of public policy.

Among academics and practitioners alike, there was keen anticipation of what could be achieved in regional science. The success of those early exploratory meetings encouraged Isard to found the Regional Science Association (RSA) in 1954 (re-named the Regional Science Association International (RSAI) in 1991). Initially regional science was almost entirely a North American pursuit, but in the following decade-and-a-half, Isard was to devote much of his energy to establishing and promoting sections of the Association throughout the world.

So, what was it that the Regional Science Association hoped to achieve? Here it is helpful to quote from the constitution:

"...the main objective shall be to foster exchange of ideas and promote studies focusing on the region and utilizing tools, methods and theoretical frameworks designed for regional analysis, as well as concepts, procedures and analytical techniques of the various social and other sciences."



Walter Isard

On this last point, Isard was particularly keen to encourage dialogue between academics from different disciplines. Thus, for example, in planning the programme for the 1956 Meetings in Cleveland, he invited five speakers to address the conference on the contribution they felt regional science would make to their discipline, choosing to focus upon geography, planning, economics, sociology and political science. In those days there were no parallel sessions which meant that delegates had the chance to hear the views of those from other subjects than their own.

Isard was clear on where the emphasis should lie with regard to inter-disciplinarity:

"The first task was not to immerse ourselves into problems and policy; rather, we had to bring together what knowledge had been accumulated in the several social science and professional fields so that each of us, given his specialized background,

could increase our common knowledge and know-how concerning relevant disciplinary concepts, theories, and techniques."

A TEXTBOOK FOR REGIONAL SCIENCE METHODS

In the early days, one of the biggest obstacles faced in bringing on board practitioners and fellow academics was the absence of a comprehensive textbook, covering the full range of regional science methods. The solution came in 1960 with the publication of *Methods of Regional Analysis*. Written by Isard, in collaboration with his PhD students, the book was an extremely ambitious undertaking, running to 784 pages. The book was intended:

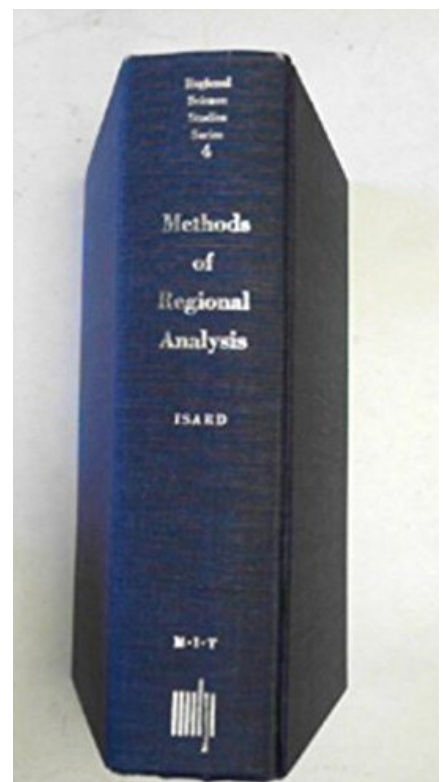
"...to make available in a relatively simple and clear-cut form the several techniques of regional analysis which have proved to have at least some validity. An attempt is made to set forth the virtues and limitations of each of these techniques so that the research worker and policy maker may be able to judge its applicability for a particular regional situation and problem."

Topics covered include population projections, migration estimation, economic base analysis, regional multipliers, industrial location analysis, industrial complex analysis, and input-output analysis. There is a remarkably full bibliography that captures a vast amount of what was then the current literature, providing a valuable resource for those readers wanting to delve more deeply into the subject material.

The most challenging part of the book comes in the final four chapters which set out the techniques of interregional linear programming, gravity models, and, most ambitious of all, an attempt to integrate the various techniques under a single framework called Channels of Synthesis. Unlike the earlier sections of the book that deal with the state of the art, these chapters are included to show what the future of regional science might hold. Whereas the bulk of the book may be seen as directed largely towards an audience of practitioners, these later chapters are aimed at (present and future) academics wishing to embrace the new field of regional science.

In a retrospective review written in 2009, Andrew Isserman described the book as "the practical side of regional science that caught on worldwide" commenting that "It is more thorough and thoughtful than the slimmer texts written since." and "Any planner who uses these methods will benefit from the rock-solid, wise discussion it provides."

Methods of Regional Analysis would no doubt have played an important role in Isard's efforts to spread the word about regional science beyond the United States. Even today, nearly sixty years after it was published, the book is a key reference, frequently quoted. Anyone reading it now, however, will find that the methods described are largely those originating from economics and demography: the book came too early to be able to reflect the growing interdisciplinary nature of regional science. This means, for example that it omits important developments in quantitative human geography, dealt with fully in Peter Haggett's influential *Locational Analysis in Human Geography* published just five years later. And those expecting to learn about suitable computational methods will also



be disappointed: the use of computers was then in its infancy. Perhaps more surprisingly, there is very little coverage of matters to do with data, especially since this was something that loomed large among those participating in the early discussions about regional science).

FINDING OUT MORE ABOUT THE HISTORY OF REGIONAL SCIENCE

Batey, P and Plane, D, (2020) (Eds), Great Minds in Regional Science, Volume 1, Switzerland: Springer Nature, including Boyce, D, "Walter Isard (1919-2010): Founding Father of Regional Science."

Fischer, M and Nijkamp, P (2021), (Eds), The Handbook of Regional Science: Second, Enlarged Edition, Switzerland: Springer Nature. This book contains eight chapters on the History of Regional Science, including Batey, P "Regional Science Methods in Planning" from which this article is an extract.

Isard, W (2003), History of Regional Science and the Regional Science Association International: The Beginnings and Early History, Switzerland: Springer Nature.

trade policy and the impacts of cohesion policies.

He loved to attend meetings and seminars where he enjoyed asking penetrating, imaginative questions; one sensed that he enjoyed being a scholar and the enthusiasm for his work resonated strongly in his publications.

References

Johannes Bröcker (1985) "Partial equilibrium theory of interregional trade and the gravity model," *Papers of the Regional Science Association* 66, 7– 18.

Johannes Bröcker (1995) "Chamberlinian spatial computable general equilibrium modelling: a theoretical framework," *Economic Systems Research*, 7, 137–149.

Johannes Bröcker (1998) "Operational Spatial Computable General Equilibrium Modelling," *Annals of Regional Science*, 32, 367–387.

Johannes Bröcker and Jean Mercenier (2011) "General Equilibrium Models for Transportation Economics," in André de Palma, Robin Lindsey, Emile Quinet, and Roger Vickerman (eds.) *Handbook of Transport Economics Vol. 1*, Cheltenham, Edward Elgar, pp. 21–45.

OBITUARY JOHANNES BRÖCKER

Johannes Bröcker, a long-time member of RSAI, passed away after a short illness on January 19, 2021 at the age of 70. He was an active member of ERSA and a regular participant in the German-speaking section. He served on the editorial boards of several journals, most prominently the *Annals of Regional Science* and *Spatial Economic Analysis*. His undergraduate degree was from Freiburg and his master and doctoral degrees and habilitation were from Kiel. With the exception of the period from 1990–2000 when he served as the Chair in Macroeconomics and Regional Science at the University of Dresden, his career was centered in Kiel. His last appointment, dating from 2000 until he retired in 2015, was as Chair in International and Regional Economics.

Johannes was a brilliant theoretical and applied spatial economist; his advisor, Karin Peschel, (who sadly passed away in June 2020) had worked with Andreas Predhöl on her doctorate and with Rolf Funck on her habilitation and she imbued that strong German location theory tradition in Johannes' work that later included his support and active participation in the August Lösch Prize committee. Johannes was the progenitor of the development of spatial computable general equilibrium models and the work reflected his firm foundation in location theory (Bröcker, 1995) where he drew on the work of Lösch and Chamberlin and in the formulation of flows in multi-economy models (Bröcker, 1989). Subsequently, he provided some integration of general equilibrium and transportation systems (Bröcker and Mercenier, 2011). However, one of his most highly cited articles (Bröcker, 1988) developed an operational spatial computable equilibrium model building up from Arrow-Debreu equilibrium under perfect competition. The model was promoted as one that was both transparent and parsimonious (in terms of the number of equations) and perfectly illustrated Johannes' ability to move effectively from strong theoretical foundations through empirical implementation. This model and subsequent version were used in a wide variety of applications assessing the impacts of infrastructure investment (especially transportation), transport and



CALLS FOR PAPERS

The Universidad Javeriana and the Banco de la República jointly organize their Third Urban and Regional Economics Workshop in June - virtually instead of in Bogotá. Among the keynote speakers and presenters are RSAI Fellows Vernon Henderson and Janet Kohlhase. After the workshop, Diego Puga and Jorge de la Roca host a class. The deadline to submit a full paper and join is 1 June. More information can be found at <https://www.regionalscience.org/>, and the registration form at [this page](#).



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SEQUENCE ANALYSIS AS A NEW TOOL FOR ANALYZING DYNAMICS ON REGIONAL LABOUR MARKETS

THE ANALYSIS OF the differences in the performance of regional labour markets has evolved over time. In the old days the dominant type of approach was the analysis of data aggregated at the regional level for variables on the number of jobs, unemployment, income etc. In the last decade, the analysis switched more and more to longitudinal micro-data at the level of individuals, preferably combined with firm-level data and information about the spatial environment where the individual or the firm is located. These data permit detailed analysis of linked employee-employer data at one point in time or changes between two points in time by comparing outcomes early and later in the career.

A relatively new statistical technique, hardly used in Regional Science, is Sequence Analysis (SA) that can capture the differences between individuals' trajectories by analysing the (dis)similarity between sequences of experienced labour market states. As such, it provides a more meaningful and holistic alternative to the more common approaches that use single transitions, outcomes at a certain point in time, or summaries of states over a certain period. SA combines a form of sequence alignment with cluster analysis. It can be used in an explorative manner (to understand which patterns occur, and how they differ) or, by applying regression analyses on SA cluster outcomes, to test hypotheses (which factors increase the likelihood of a particular trajectory). Trajectories can be of various types depending on the states that are identified. In labour market studies, career trajectories can be analysed with SA applying it to sequences of one's position at the labour market (in school, work, unemployed or inactive),

job mobility trajectories through analysing how long persons work for a firm or in sectors, but also spatial trajectories using migration or commuting data.

In this short article, we will illustrate the usefulness of SA by means of an analysis of career patterns after a spell of unemployment. Episodes of unemployment, particularly long-term unemployment, are known to have a severe impact on further career development. Most empirical studies therefore focus on explaining differences in unemployment duration, that is, how long it takes someone who became unemployed to regain employment. But returning to employment is no guarantee for avoiding subsequent periods of unemployment. An episode of unemployment is known to lower future employment security: it increases the risk of repeated unemployment spells and long-term unemployment. Policies aimed at reducing the negative effects of unemployment thus need to look beyond single transitions from unemployment to work and explore further career development after re-entering employment. While one person may return to a stable employment situation after a period of unemployment, the other may end up in a cycle of short-term jobs interrupted by new periods of unemployment. These examples illustrate that understanding who is more likely to find a long-term escape route out of unemployment requires a detailed study of the career development of formerly unemployed over a longer period, taking into account differences in job quality and the timing of transitions.

In an empirical study, registry microdata provided by Statistics Netherlands is analysed to identify the career trajectories of formerly unemployed in the Netherlands and subsequently estimate which individual and regional factors contribute toward having one of the identified career trajectories. The study focuses on the group who became dependent on unemployment benefits as their

main source of income in the period 2007 to 2009 and regained employment within one year (the latter applying to about two thirds of the total group). Sequence analysis is used to identify typical career patterns for this group of formerly short-term unemployed over a period of five years after they re-enter the labour market. During this period, their labour market position is measured on a monthly basis distinguishing between four labour market states: employed in a standard job (permanent contract for at least 20 hours a week), employed in a non-standard job (any other type of employment), unemployed or inactive. To measure the dissimilarity between the career paths of formerly short-term unemployed, optimal matching is used to determine the distance between their sequences in occurrence and duration of the four labour market states in all 60 months during the five-year period after re-employment. The distance is calculated as the minimal cost to align individual sequences through insertion and deletion (indel), and substitution of states. Next, cluster analysis (Ward's method) is used to identify ideal-typical trajectories by grouping similar sequences, that is, those sequences sharing dissimilarity with all other sequences. As Ward's method is a form of

Figure 1: Transversal state distribution by career path of formerly short-term unemployed.



Source: Statistics Netherlands 2020; adapted by PBL

agglomerative hierarchical clustering and there are no theoretical grounds for deciding on a particular number of clusters, Average Silhouette Width (ASW) and visual inspection of the resulting partitioning are used to decide on the appropriate number of clusters.

Using this approach, three typical career trajectories of formerly short-term unemployed are identified over a period of five years after their return to employment: 1. stable standard employment; 2. stable non-standard employment and 3. intermittent employment. As Figure 1 shows, these trajectories differ substantially in the occurrence and length of spells of standard, non-standard and non-employment.

The first trajectory, displayed in the left graph of Figure 1, is characterised by being employed in a standard job for the majority of time. This pattern fits with the career sequences of 42% of those re-entering employment within the imposed period of one year. Although 66% of all formerly unemployed assigned to this career trajectory starts off in a non-standard job, most of them eventually work in a standard job and after five years 80% has a standard job. Most transitions to standard employment occur within the first year after re-employment although some workers first have two or more non-standard employment spells before having a standard job. The second trajectory, which applies to the career path of 15% of all formerly short-term, has a long spell of non-standard employment as its most salient feature. As Figure 1 shows, many persons in this group experience a change in their career trajectory 3 years after re-employment which corresponds with the maximum duration of temporary job contracts in the Netherlands at the time of observation. Finally, 43% of the re-entrants has a career trajectory characterised by intermittent employment. This trajectory is clearly more unstable than the previous two trajectories with multiple subsequent spells of non-standard employment often interspersed with periods of unemployment. Only 10% of the formerly unemployed in this trajectory is employed the whole five-year period after re-entry and almost half of them has at least one unemployment spell of more than 12 months. Also, the share persons that is inactive gradually increases and is 20% at the end of the period.

For regional scientists, it is interesting to study regional heterogeneity in the occurrence of the trajectories. Figure 2 shows that there are substantial regional differences in the share of formerly unemployed that have a career pattern in line with the three trajectories as identified by the SA analysis. As can be expected, a larger share of the formerly unemployed living in the economic core, the Randstad, has a standard employment trajectory compared to those living in the national periphery in the North and South. In the latter regions, more end up in the least stable trajectory (the intermittent trajectory), while a relatively high share of the re-entrants living in the intermediate zone have a stable non-standard career pattern. With multinomial regression analysis the probability of having one of the three career trajectories can be estimated. This analysis shows that the differences in individual characteristics of the formerly unemployed only partially explain the regional differences shown in figure 2. This indicates that a successful re-entry in the labour market after unemployment also depends on the conditions in the regional labour market where a person lives.

With the example described above, we try to make

clear that sequence analysis is a powerful method to unravel individual career patterns. It helps to better understand career development after an event, and allows us to study spatial differences in career patterns and how this can be related to the situation on regional labour markets. The outcomes provide useful insights to develop more effective regional labour market policies. More information about the method and how to use it, can be found in the following publications:

- Weterings, Anet, Marten Middeldorp & Arjen Edzes (2020). Transitions out of unemployment and subsequent employment security Individual and regional determinants? Draft paper.
- Weterings, Anet, Marten Middeldorp & Martijn van den Berge (2018). Regionale verschillen in carrièreverloop na de WW, Den Haag: PBL Planbureau voor de Leefomgeving.
- Weterings, Anet, Marten Middeldorp & Martijn van den Berge (2019). Werkzekerheid na werkloosheid: de rol van de arbeidsmarktregio, Den Haag: PBL Planbureau voor de Leefomgeving.
- Middeldorp, Marten, Arjen Edzes and Joke van Dijk (2019). 'Smoothness of the School-to-Work Transition: General versus Vocational Upper-Secondary Education', European Sociological Review, Volume 35 (1), p.81-97, DOI: 10.1093/esr/jcy043.

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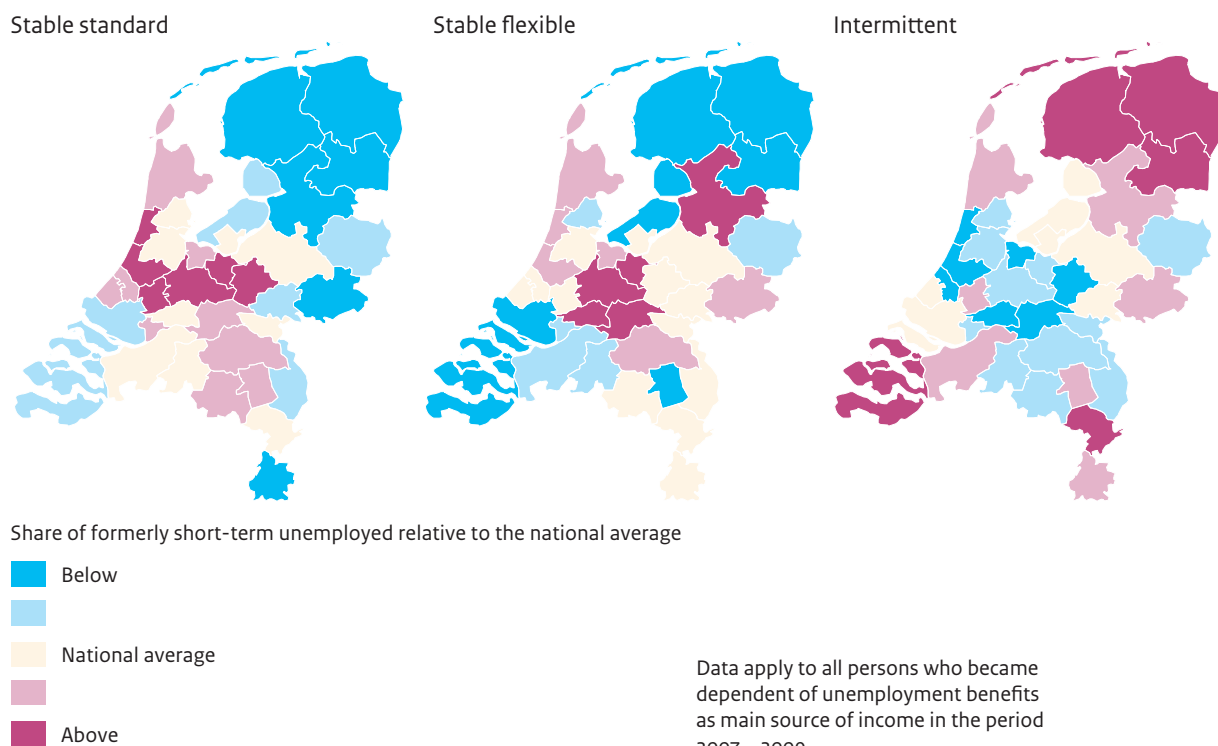
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Figure 2: Share of formerly short-term unemployed relative to the national average



Source: Statistics Netherlands 2020; adapted by PBL