

News from the Society for Decision Making Under Deep Uncertainty

September 2018

<http://www.deepuncertainty.org/>

#deepuncertainty

OUR MISSION

The Society for Decision Making Under Deep Uncertainty is a multi-disciplinary association of professionals working to improve processes, methods, and tools for decision making under deep uncertainty, facilitate their use in practice, and foster effective and responsible decision making in our rapidly changing world. While we share interests with other societies, ours is unique in its focus on developing, disseminating, and using these new approaches.

Welcome to the newsletter of the Society for Decision Making Under Deep Uncertainty

Quick link to ('In this issue'):

[2018 DMDU Society Annual Meeting: Update](#); [Calls for volunteers](#); [2018 Leadership Team Elections](#); [Recent Events](#); [Forthcoming Events](#); [Training](#); [Special issues related to DMDU](#); [Publications](#); [Job vacancy](#)

The DMDU [website](#) has been updated!

Please check out our updated website, including:

- The new [mission statement](#)
- Updated [people section](#)
- New '[get involved](#)' section with information on how to submit your paper or a blog, a call for Committee Members, and information on the 2018 Leadership Elections

2018 DMDU Society Annual Meeting: Update

By Steven W. Popper, Chair, Meeting organizing committee

Greetings to the members and friends of the Society. Our next annual meeting, November 14-15 in Culver City, is in the final planning stages and taking shape nicely. As before, we will first hold a prior Training Day on November 13 for Society members as well as the general public. This will be a free event but with prior registration required. There will be more information about this shortly. Let me go into detail on several points.

Location. The venue for the meeting is one of several innovations we are exploring this year. Previously, our meeting spaces were at the organization serving as host – World Bank, RAND, Deltares/TU Delft and Oxford University. That is not the case this year. The vision for this meeting is to engage with the local community and the social, academic, infrastructural, governmental and business fabric of greater Los Angeles. There is a further reason to extend ourselves. In prior meetings, attendance was subject to physical limitations. There was also a desire to preserve the intimate spirit of our meetings. Nevertheless, each year there has been a waiting list that could not clear. This year, we will have more than enough space. There are still

practical reasons to keep our numbers not much larger than before, but the extra space we have available means we can adopt more innovative approaches to how we structure sessions.

The building itself is both wonderful and strange. Once the home of Sony Pictures' head offices, it is now being completely refurbished as rental office space. The owners are providing us with use of the huge, front atrium (see pictures) as well as the entire largest floor of what will eventually become office space. The construction work is done. We will occupy it prior to it being leased out. This means that it will be an entirely open space with open ceilings as well. In a way, it will also be emblematic of where Los Angeles, and our Society are at this time – evolving, changing, becoming and open to transformation.

Using this space for our meeting will necessarily entail much more effort than we have taken on before. But the experience we gain will be invaluable as the Society grows and we determine which direction we wish to take future Society events.



Posters. The location provides new opportunities for several aspects of the meeting. The preliminary agenda we have posted shows not only poster sessions but several large, colloquium-style sessions in which posters will also be part of the experience. At most meetings, posters are available only at certain times and are usually in a peripheral space. While we will also have specific poster sessions, we face no need to limit their viewing solely to those times nor to take them down immediately thereafter. Further, posters are usually considered to be only secondary to the main meetings. We intend something different. We want to make the posters integral to our space and to our deliberations during the entire course of the meeting. Those invited to present posters provided abstracts that did not necessarily fit within the sessions planned by the organizing committee, but they are too interesting not to include for wider exposure and discussion. Also for those abstracts that do appear as presentations in panel session, we invite you to provide a poster of your work for more leisurely display even if not required by the format of your session.

Registration. Registration has been opened for those who appear as corresponding authors of abstracts accepted on to the program. On September 10, we will open general registration. Following the practice established for the 2017 meeting in Oxford, we will be charging a registration fee for those attending from the U.S., the host country. Student rates will be a fraction of those for non-students. While we can make no commitments at this time, we continue our efforts to develop sponsorship and funding support for attendees coming from abroad who are students or are from developing countries. Registrants will receive updates on this and other matters. One such matter is the possibility of organizing field trips for the day after the meeting, Friday, 16 November. We will send out surveys to gauge interest in several possibilities we have in mind.

Training Day. We have not yet released the program for the Training Day, Tuesday, 13 November. There are several innovations we are considering that are still under discussion and will be shared with the membership once we have determined their feasibility.

That's it for now. Let me express on behalf of the entire organizing committee our hope to see you this November in Culver City, within an easy walk to many of the famous movie studios going back to the early days of Hollywood film production and the place where the future of greater Los Angeles is being born.

Updated workshop information will continue to be available on our website: <http://www.deepuncertainty.org/annual-meetings/2018-annual-meeting/>

Andrea Golay, DMDU Society administrator
Laurna Kaatz
Judy Lawrence
Sadie McEvoy
Edmundo Molina-Perez
Steven Popper, chair, organizing committee
Julie Rozenberg
Thomas Small

Calls for volunteers

Call for Digital Training Chair and Co-Chair

The Society's annual meeting, which includes a training day, is a valuable event for learning about applications of deep uncertainty planning and disseminating tips and tools for such studies. However, learning need not be limited to three days a year at one location. The leadership team recognizes that many regions of the world are under- or unrepresented at our meetings and would like to offer digital training and educational content for entities anywhere who would like a more in-depth and remotely accessible introduction to our methods. We are seeking two individuals – a Digital Training Chair and Co-chair – to lead a small team in creating a series of videos that present introductory material, methods, and example applications. Similarly to the planning and execution of the Society's annual meeting, this is intended to be a finite project and not a rolling commitment. The leadership team hopes to engage society members who have experience in creating digital content in this effort and will facilitate necessary connections with other members who have specific relevant expertise on various topics. If you are interested in contributing to this effort which will commence in January 2019, please email Marjolijn Haasnoot at [marjolijn.haasnoot\[at\]deltares.nl](mailto:marjolijn.haasnoot@deltares.nl)

Call for 'DMDU Checklist' Ad Hoc Committee

One of the Society's goals is to be a source of guidance that can be widely accessed and understood by any entities that want to include deep uncertainty concepts in their activities. To that end, the leadership team has determined that one valuable product would be a DMDU methods 'checklist' for practitioners to reference while scoping or undertaking a study. The checklist may include, for example, prompts for gathering appropriate data, considering a sufficiently diverse set of futures, identifying high-quality scenarios, and employing suitable decision criteria.

To create the checklist we are soliciting volunteers for an ad hoc committee. It is our hope that the committee will include both experienced researchers and practitioners as well as those with less experience whose needs and questions could help to steer the list. The expected time/effort commitment is approximately six months over which one could expect two to three conference calls with other committee members, two to three rounds of document edits via email, and a report to the leadership team either via conference call or email. The target start date for this effort is January 2019. If you would like to participate, please email Rob Lempert at [lempert\[at\]rand.org](mailto:lempert@rand.org)

For more information on these and other opportunities, please visit us at <http://www.deepuncertainty.org/get-involved/>

2018 Leadership Team Elections

This November/December we will hold our Society's second official election for members of our leadership team. Elected team members serve in their role for two years, beginning in January after the election. An official call for candidates will be posted in September 2018. The Society seeks candidates in the following roles:

- **President.** Leads, oversees, and coordinates across the Society's numerous functions, monitors and evaluates the Society's progress towards its goals, represents the Society to external audiences, and is a key point of contact and engagement.
- **Vice President.** Serves in place of the President when necessary, supports the President in executing responsibilities, and may take lead responsibility in certain areas, as needed and agreed upon with the President.
- **Career Development Chair.** Identifies and shares proposal, grant, employment, and professional development opportunities.
- **Communications & Outreach Chair.** Maintains periodic communication with members and external audiences. With Membership Chair, identifies and develops new modes of engaging with members and external audiences.
- **Education & Training Chair.** Identifies and develops education and training opportunities for the Society's members, particularly for a new generation of decision makers and analysts.
- **Fundraising Chair.** Identifies costs required to sustain Society activities and identifies and pursues opportunities to raise necessary funds.
- **Membership Chair.** Maintains membership roster. Identifies gaps in membership and opportunities for growing the Society strategically.
- **Rules & Processes Chair.** Establishes and documents rules and processes necessary for smooth, transparent, and consistent functioning year-to-year, and is in charge of the process of amending and changing the rules and processes.
- **Administrator.** Schedules meetings, maintains records of meetings, sets agendas, and shares meeting outcomes with Society members.

This year's ballot will also include proposed Rules Changes to be ratified by DMDU membership. Key 2018 Election Cycle Dates:

- Sept: Call for leadership candidates
- Late Oct: Deadline for candidate statements
- Early Nov: Announce slate of candidates
- Nov/Dec: Hold online elections
- Dec: Share election results
- Dec/Jan: Leadership handover

Updated Mission Statement, Vision Statement, and Strategic Objectives

The DMDU Leadership Team has been working to craft statements that properly reflect the society's mission, vision, and strategic objectives. The updated statements are now available on our website: <http://www.deepuncertainty.org/about-us/>

Recent Events

DMDU Session and Meet-up @ Adaptation futures, June 18, in Cape Town.

This side event was a two-hour session focused on sharing experiences from using pathways approaches in coastal adaptation. Judy Lawrence gave a presentation on DMDU, pathways and coastal applications, which was followed by a panel discussion with Stephane Hallegate (World Bank), Pradeep Kurukulasuriya (UNDP), Judy Lawrence (Victory University of Wellington) Robert Nicholls (University of Southampton), and Sadie McEvoy (Deltares) moderating. The panel addressed questions of how to link research on adaptive planning approaches to practice and practitioners, what conditions are needed to implement adaptive planning pathways approaches, and how to transition to adaptive planning as practice, as opposed to stand-alone projects. Following the panel discussion, breakout groups worked with panellists on one of two challenge: using adaptation pathways in developing countries (led by Stephane and Pradeep), and using adaptation pathways for long time horizon planning (led by Judy and Robert). The breakout groups were a valuable platform for lively debates and knowledge sharing among session participants. We had a full house for the event, with participants representing many different countries and levels of experience with DMDU methods. A few points made during the session:

- Question over who convenes the discussion across mandates and the importance of independence in that
- Planning has a short life in most decision settings - how to change that?
- A long term strategic approach outside strictures of rules to break the quest for certainty
- Importance of experimentation and learning
- A strong foundation of governance and learning, focusing on building trust and consensus, are key to enable adaptive planning
- Investing early on in planning for resilience pays off in the end
- Local governments lack time to plan, but they need to be proactive
- These methods assume that planning leads to decisions, but this is often not the case in developing countries

Following the session, an informal tapas dinner and drinks was organized at a nearby restaurant. About 30 local society members and session participants joined. Judy and Sadie urged many attendees to submit abstracts for our November meeting and we hope to see some new faces and African representation in California.

DMDU Methods Featured at Water Utility Climate Alliance (WUCA) Training Session

On Aug 8 and 9, the Water Utility Climate Alliance (WUCA) hosted a two-day technical training for drinking water and wastewater utility managers and consultants at the Headquarters of the Metropolitan Water District in Los Angeles, California. DMDU methods were a central focus of this training session. WUCA Chair and DMDU Society member Lurna Kaatz helped organize the training. Rob Lempert, DMDU Society President, was one of a dozen trainers. WUCA is planning to hold similar training sessions across the US in the coming year, starting with one in Portland, Oregon at the beginning of December.

California Adaptation Forum Features Adaptation Pathways

The State of California held its third biennial Climate Adaptation Forum (CAF) on Aug 27-29 in Sacramento. DMDU methods, in particular adaptation pathways, played a significant role in at the CAF. The first morning began with a session led by California Deborah Halberstadt, Executive Director of the State's Ocean Protection Council focused on the new California Sea Level rise guidance. California's new guidance recommends the use of adaptation pathways to help address the wide range of sea level

rise projections, which include an expected value of about 2 feet by 2100, with a non-probabilistic worst case of over 10 feet. On the second day, Robert Kay of ICF, Caitlin Cornwall of the Sonoma Ecology Center, Alexis Dufour of the San Francisco Public Utilities Commission, Deanna Haines of the San Diego Gas & Electric Company, and Tiffany Wise-West of the City of Santa Cruz participated in a session on *Flexible Adaptation Pathways: Emerging Applications in California*.

DMDU Session and Meet-up @ IEMSS conference

The leadership team took advantage of researchers and professionals gathering for the IEMSS 2018 conference to organize a DMDU Society meetup on June 25th in Fort Collins, Colorado. Along with the usual DMDU suspects, the event brought together a wide range of both young and seasoned researchers interested in the work and mission of the Society. Renewable energy, transportation, water treatment, concrete design, and water management were a few of the fields represented and discussed over delicious food and craft brews.



Bay Area Climate Adaptation Network (BayCAN) launched with an introduction of DMDU methods

July 11th the Bay Area Climate Adaptation Network (BayCAN) was launched during a meeting in San Francisco. BayCAN is designed to be a collaborative network built by and for local government staff to help coordinate an effective and equitable response to the impacts of climate change on water, public health, ecosystems, fire, and our shorelines. BayCAN came out of dialogue among a number of regional stakeholders over the last 6 months. For more information about BayCAN's draft goals and potential structure, [view an overview here](#). The BayCan Kickoff was hosted by the Local Government Commission, the Climate Readiness Institute, the San Francisco Public Utilities Commission, Alameda County, Marin County, San Mateo County, the City of Alameda, the City of Berkeley, the San Francisco Estuary Institute, Four Twenty Seven, and the Nature Conservancy.

After a Meet and greet there was a discussion of the challenges of planning for adaptation under great uncertainty, and one technique for doing that - Adaptation Pathways - that many practitioners are turning to in California. From the DMDU Society, Rob Lempert (Rand) introduced the general concepts of decision making under uncertainty, and Marjolijn Haasnoot and Kathryn Roscoe (Deltares) presented the pathways approach and illustrated this approach for decision making on adaptation to sea level rise for the cases of Miami and the Netherlands. For more info about BayCAN or this meeting, please reach out to David Behar (DBehar@sfwater.org) or Bruce Riordan (bruce@climatereadinessinstitute.org).



Session on Emerging Applications of Flexible Adaptation Pathways Discussed at the California Adaptation Forum by Dr Robert Kay, Principal, Climate Change Adaptation and Resilience, ICF, Los Angeles



Session panelists (L-R) Alexis Dufour, Long-Term Vulnerability Project Manager, San Francisco Water, Power and Sewer; Deanna Haines, Director of Energy & Environmental Policy, SoCalGas; myself, Caitlin Cornwall, Biologist & Research Program Manager, Sonoma Ecology Center; and Tiffany Wise-West, Sustainability & Climate Action Manager City of Santa Cruz (Credit: Robert Kay)

The 3rd California Adaptation Forum was held from 27-29 August 2018 in Sacramento, the State's capital. The forum gathered together over 700 delegates from businesses, governments, NGOs and academia to discuss the rapidly emerging impacts of climate change and to explore innovative adaptation solutions. I was fortunate to have facilitated a technical session on Flexible Adaptation Pathways and discussed its potential applications in California. Alexis Dufour first presented the experimental work on adaptation pathways being undertaken by San Francisco Water, Power and Sewer. Deanna Haines outlined SoCalGas two climate change vulnerability assessments undertaken by San Diego gas & electricity utilities in partnership with ICF under the [4th California Climate Assessment](#).

Deanna said that the use of adaptation pathways had emerged during the projects as an appropriate tool for adaptation planning and implementation tracking (in a perfect stroke of timing the 4th Climate Assessment [electricity](#) and [gas](#) reports published the day before the session). Newer to adaptation pathways were Caitlin Cornwall, Biologist & Research Program Manager, Sonoma Ecology Center and Tiffany Wise-West, the Sustainability & Climate Action Manager City of Santa Cruz. Both described how the combination of analytical rigor and the visual metaphor of adaptation pathway mapping has significant potential in community-scale adaptation planning in California.

The highly engaged audience questioned panellists on technical aspects of defining adaptation signposts, triggers and thresholds. Participants asked do you define what to measure, why and when? This quickly set off a lively discussion on the governance of adaptation pathways. Who, the panellists were asked, should be making decisions on when to change path, and when. It emerged through the discussion that the complex systems of multi-actor, multi-tiered decision-making in California is a significant opportunity for the development of a stakeholder-driven approach to adaptation pathway design. This would not be easy, the panel concluded, but given the technique's promise, this is a challenge worth facing.

Those interested in learning more about Flexible Adaptation Pathways were invited to attend the forthcoming DMDU meeting in November, not too far away in Los Angeles. Please contact Robert directly for more information on the session – Robert.kay@icf.com

Workshop on Strategic Uncertainty in National Security, Samuel Neaman Institute, Technion, Israel, 26th June, 2018

A 1-day workshop on 'Strategic Uncertainty in National Security' was held at the Samuel Neaman Institute, on the campus of the Technion - Israel, Institute of Technology, on 26 June 2018. Six lectures, accompanied by extensive discussion among 25 participants, focussed on conflicting and complementary approaches to managing deep uncertainty in strategic affairs for national security. Extensive information about the workshop can be found on the website: <https://info-gap.technion.ac.il/strategic-uncertainty-in-national-security>

Forthcoming Events

Scenario Planning and Foresight 2018

December 10 -11, 2018, Warwick Business School, Coventry UK

This second conference on Scenario Planning and Foresight: Advancing Theory and Improving Practice builds on the success of the first conference on Scenario Planning (2015) and extends its scope to include contributions from the wider field of Foresight. This will be a two-day event with keynote addresses from distinguished academics and experienced practitioners, and discussions on the latest developments in academic research and practical applications relating to scenario analysis. We are inviting academics and practitioners to submit abstracts of up to 500 words (including references). All submissions will be reviewed to be accepted to the conference. Academics' contributions could be both theoretical and empirical from any field of scenario planning or foresight. The abstracts should indicate: the research focus; the literature to which they are contributing; a short description of the methodology; and an indication of the research outcomes. We welcome contributions from doctoral students for whom there will be a limited number of bursaries to cover the registration fee. Practitioners' contributions could be both from their own organisation and/or consultancy projects. Abstracts should indicate the nature of the intervention and an indication on the lessons learned. The conference organisers have secured **special issues** of two journals, *Futures & Foresight Science* and *Technological Forecasting and Social Change*, for publication of selected conference presentations.

For info: <https://warwick.ac.uk/fac/soc/wbs/subjects/orms/ormsevents/scenario2018/>

Forum on Scenarios for Climate and Societal Futures

March 11-13, 2019, University of Denver, Denver, Colorado

A rapidly expanding set of activities is extending and applying the new framework on integrated climate change scenarios. Researchers are using Shared Socioeconomic Pathways (SSPs), Representative Concentration Pathways (RCPs), and other approaches to characterizing future societal and environmental conditions to investigate global change issues, including the Sustainable Development Goals. The Scenarios Forum aims to bring together a diverse set of communities working with the new framework to share their experiences, progress, and plans. By taking stock of progress and facilitating scenario-related research, this meeting will inform the use of scenarios in the IPCC Sixth Assessment Report (AR6) and help ensure a research base sufficient to inform future assessments and policy initiatives.

Abstracts may be submitted to one of the 40 sessions that have been proposed by the community, or to an Open category through September 28, 2018.

<https://www.scenariosforum2019.com/>

UNFCCC**Regional****Adaptation****Workshops**

The Alliance for Global Water Adaptation (AGWA) has been asked by the UNFCCC Consultative Group of Experts (CGE) to contribute to three regional workshops (Africa, Latin America & Caribbean [LAC], and Asia) for roughly a total of 130 national governments on how to help countries and communities adjust to climate impacts expressed through freshwater. These workshops are focused on training policy makers in vulnerability and adaptation assessment: how to better assess water risk, to determine what constitutes a good or bad adaptation project, and to report these plans and activities in line with UNFCCC National Adaptation Communication guidelines. The first workshop took place in the West African country of Togo in July, with additional workshops scheduled for the LAC region (hosted in Paraguay in September) and Asia (hosted in Nepal in October).

<https://unfccc.int/event/cge-adaptation-workshop-for-the-apeeregion>

Training

World Bank training on DMDU

Infrastructure serves a community for a long time. The decisions on infrastructure investments that are made now will have impacts over the decades and sometimes centuries to come. However, future conditions that may affect the infrastructure investment are deeply uncertain, and failure to manage these uncertainties could result in serious consequences. This new e-course describes an innovative methodology to deal with these uncertainties: Decision Making under Deep Uncertainty (DMDU), and how to use it to make robust decisions for long term investments in a changing world.

<https://olc.worldbank.org/content/decision-making-under-deep-uncertainty-%E2%80%93-long-lasting-investments-changing-world-self-paced>

New online course Adaptive Planning for Infrastructure and Water Management

In October 2018 TU Delft will launch a new online course Adaptive Planning for Infrastructure and Water Management to help professionals identify 'deep' uncertainties, anticipate change and design adaptation pathways for large-scale and long-term interventions in infrastructure and water management systems. In this six-week online course participants will learn by doing: using an electronic serious game - especially adapted for this course - they will gain experience in decision-making under uncertainty, use their self-made adaptation pathway maps, and evaluate these under different scenarios.

<https://online-learning.tudelft.nl/courses/adaptive-planning-for-infrastructure-and-water-management/>

Special issues related to DMDU

Special issue of *Sustainability* journal on the subject '**Policy pathways for sustainability**', edited by J. H. Kwakkel, Delft University; M. Haasnoot, Deltares and Utrecht University; M. Stafford Smith, CIRO and E. Trutnevyte, University of Geneva.

The pathway metaphor is gaining prominence in various scientific domains. For example, there are papers on transition pathways, transformative pathways, adaptive pathways, adaptation pathways, emission reduction pathways, climate resilient development pathways, etc. Common across all these usages is the idea that policies are conceptualized as sequences of actions taken over time that co-evolve with changing conditions. However, despite this increasing usage of the policy pathway concept in various scientific domains, limited cross-fertilization amongst these disciplines is taking place. In addition, the uptake of policy pathways in practice has been quite limited up till now. This Special Issue aims at bringing together, for the first time, researchers working on policy pathways for sustainability in any domain with the intention to

foster interaction and cross-fertilization. Topics that are of interest to this Special Issue include, but are not limited to:

- Developing pathways with actions from multiple stakeholders
- A comparative perspective on policy pathways in developed and developing countries
- Model-based support for designing policy pathways
- Decision implication of policy pathways (from pathways to a plan)
- Monitoring for the implementation of policy pathways
- Real world use and implementation of policy pathways

This Special Issue is particularly interested in methodological contributions that have a wider significance both within the application domain and, in particular, across domains. Case studies are welcome, but should make clear what their wider significance is to the various fields employing the policy pathways concept.

Deadline for manuscript submissions: 30 November 2018

For info.:

http://www.mdpi.com/journal/sustainability/special_issues/Policy_Pathways_Sustainability

Special issue of *Environment Science & Policy* on the subject of '**Adaptation pathways to inform policy and practice in the context of development**', edited by S. E. Werners, Wageningen University & Research; J. Butler, CSIRO; A. Pandey, ICIMOD; E. Totin, CGIAR/ICRISAT-Mali; K. Vincent, KULIMA; R. Wise, CSIO.

In order for development to be climate-resilient it needs to include choices and actions that reduce climate change impacts and sustain development efforts over time. In the context of adaptation to climate change, adaptation pathways are proposed as a promising decision-focused approach.

In this special issue we evaluate the utility of different conceptualisations of pathways applied to different contexts, at different scales, and with different stakeholder groups. In particular, we aim to highlight the ways in which adaptation pathways are being used in developing country contexts, and the extent to which pathways approaches evolving in these situations are transferable and adaptable. With the special issue we aim to synthesize lessons across case studies of pathway development, propose guiding principles for pathway formulation, and a future research agenda.

Submit to journal in September/October.

For further info. contact: S. E. Werners: werners@mungo.nl

Publications

Book on Collaborative Water Resources Planning for Uncertain Futures coming in October

Climate Risk Informed Decision Analysis (CRIDA) is a flexible and robust, five-step water resources planning framework. The CRIDA methodology will be published this October as a book-length document from the International Center for Integrated Water Resources Management (ICIWaRM) and UNESCO's International Hydrological Programme (IHP). While building on existing "bottom-up," risk-based methods, CRIDA helps planners address deep uncertainties associated with climatic, demographic and land-use change and other potential causes of system failure. This approach implements both decision scaling and adaptation pathways, guiding technical decision makers to develop effective solutions, even in complex stakeholder contexts. CRIDA has already been tested in a number of pilot projects across the globe. It will initially launch as a publication and develop into a community of practice around

AGWA's capacity building Knowledge Platform on bottom-up approaches to climate adaptation (<http://aqwaguide.org>).

Book by Yakov Ben Haim on Dilemmas of Wonderland: Decisions in the Age of Innovation coming out 13th September, 2018.

Innovations provide new and purportedly better opportunities, but - because of their newness - they are often more uncertain and potentially worse than existing options. There are new drugs, new energy sources, new foods, new manufacturing technologies, new toys and new pedagogical methods, new weapon systems, and many other discoveries and inventions. To use or not to use a new and promising but unfamiliar and hence uncertain innovation? That dilemma faces everybody. Innovation dilemmas arise even when a new technology is not involved. The dilemma arises from new social attitudes and conceptions. These dilemmas have far-reaching implications for individuals, organizations, and society at large. This book offers practical conceptual tools for understanding and managing innovation dilemmas, for a wide audience, and discusses many examples, including e-reading, bipolar disorder and pregnancy, disruptive technology in industry, stock markets, agricultural productivity and world hunger, military hardware, military intelligence, biological conservation, on-line learning, and more.

See Oxford University Press website for further details: <https://global.oup.com/academic/product/the-dilemmas-of-wonderland-9780198822233?cc=il&lang=en&#>

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Sven Ove Hansson, **Risk analysis under structural uncertainty**, pp. 241-264 in Terje Aven and Enrico Zio, Knowledge in Risk Assessment and Management, Wiley 2018.

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Job vacancy

Open PhD position in decision theory and environmental management at Lund University, Sweden. This project will study the quantification and implementation of uncertainty

in modelling supporting scientific assessments as well as the impact of uncertainty on human behaviour when management outcomes depend on multiple decision makers. The project includes a case study on agent based modelling of geese management in agricultural landscapes. Last day to apply is Oct 1st.

<https://lu.mynetworkglobal.com/en/what:job/jobID:224072/>

Thank you for reading the newsletter of the Society for Decision Making Under Deep Uncertainty

The newsletter is brought to you by the Communication & Outreach Team
(James Derbyshire, Edoardo Borgomeo, Marjolijn Haasnoot).