CoMSES Digest: Summer 2018

Volume 6, No. 2 March 15, 2018 - June 30, 2018

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From the Editor

Greetings from CoMSES, and greetings from a summer that was somewhat delayed here in Chicago but has finally arrived. The fact that it's summer is clear from the calendar of events: workshops, conferences, and courses are abundant this time of year, but submission deadlines are few and far between. Two important exceptions: the CoMSES Virtual Conference and the Winter School on Agent Based Modeling and Social Ecological Systems are coming up fast, and submission deadlines for both will fall within the next few months. The articles below in the CoMSES news section give all the details.

After your workshops and courses are done, don't forget to upload your models to the model library!

Best,

John T. Murphy, CoMSES Digest Editor

CoMSES News

CoMSES 2018 Virtual Conference

CoMSES Net is hosting its second virtual conference, CoMSES 2018!

We welcome presentations dealing with agent-based modeling of social, ecological and social-ecological systems, as well as methodological issues in the context of agent-based modeling. This conference will occur online. During the conference, which will take place over three weeks, talks will be available for viewing on the conference website (embedded in our Discourse forum). Q&A will also take place online during this period, as participants can engage with speakers on our forum.

If you are interested in presenting at CoMSES 2018, instead of traveling to a conference to attend panels and deliver a talk, you will instead be expected to do the following:

Record yourselves giving a talk no more than 12 minutes.

During the conference, participants may ask you questions, and you will be expected to respond to questions raised by your talk.

During the conference, you can also view other presentations and participate in other discussions.

You will be expected to have an up to date profile page on comses.net by the time of submission.

The deadline for video submission is Sunday, September 16.

For more information see https://www.comses.net/conference/2018/

Winter School on Agent-Based Modelling and Social-Ecological Systems

CoMSES Net is hosting its annual Winter School on Agent-Based Modelling and Social-Ecological Systems January 7-11, 2019 in sunny Tempe, Arizona, USA.

Purpose of the Winter School

The overall aim of the winter school is that the participants will learn about the opportunities and challenges of agent-based modeling of social-ecological systems. Participants will engage intensely with a few comprehensive models, learn best practices in doing modeling, and learn about the different modeling challenges across the various social and natural sciences.

Course Content

The winter school has two main components: 1) lectures and 2) project work. Lectures will introduce participants to different concepts in the social and natural sciences critical for modeling social-ecological systems, such as human behavior, collective behavior, hydrology, and land cover change. Students will also learn and use best practices to do modeling (reproducibility, model documentation, analysis of models). The participants will be introduced to various stylized agent-based models of actual research projects on

social-ecological systems. Groups of participants will chose one of the models and adapt, expand, and analyze the model to better understand the impact of a particular assumptions on the overall outcome of the social-ecological system. The models are written in NetLogo. Therefore, participants must be able to read and write NetLogo programming code.

Application deadline: August 31, 2018

More details at: https://complexity.asu.edu/winterschool

From the Forums

General Forum

- ABM and AI: https://forum.comses.net/t/help-abm-and-ai/2033
- Model description and papers: https://forum.comses.net/t/model-description-and-papers/665
- Delayed Impact of Fair Machine Learning: https://forum.comses.net/t/delayed-impact-of-fair-machine-learning/6688
- Beta data carpentry curriculum for social scientists released: feedback requested: https://forum.comses.net/t/beta-data-carpentry-curriculum-for-social-scientists-released-feedback-requested/6695
- Anatomy of an online misinformation network: https://forum.comses.net/t/anatomy-of-an-online-misinformation-network/6715

Jobs and Appointments

Note: Some of the postings have application deadlines that have already passed; we include all of them here for those who are curious about the state of the field, and remind those of you who may be actively searching for a new position that we maintain an RSS feed for jobs where you can receive these posts as soon as they are added. For the information listed here, be sure to check the deadline as given in the original post or from the institutions directly.

Fully-funded PhD: Agent-Based Modelling of Smart Cities https://www.comses.net/jobs/359/

Fully funded PhD opportunity: Modelling policies for vulnerable young people https://www.comses.net/jobs/358/

Post-Doctoral Position on Agent-based modelling for Ecosystem Services Management https://www.comses.net/jobs/357/

Calendar of Events: July-September

Conferences and Workshops

GI_Forum conference "Spatial Simulation" session: GI_Forum conference "Spatial Simulation" session
July 3 - 6, Salzburg, Austria
https://www.comses.net/events/453/

Agent-Based Simulation Session at the 29th European Conference on Operational Research (EURO18)
July 8 - 11, Valencia, Italy
https://www.comses.net/events/476/

2018 International Conference on Social Computing, Behavioral-Cultural Modeling & Prediction and Behavior Representation in Modeling and Simulation
July 10 - 13, Washington DC, USA
https://www.comses.net/events/457/

Socio-Cognitive Systems: Computational and Formal models
July 9 - 19, Stockholm, Sweden
https://www.comses.net/events/480/

Agent-Based Modelling of Urban Systems - ABMUS2018
July 14 - 16, Stockholm, Sweden
https://www.comses.net/events/478/

Socio-Cognitive Systems: Computational and Formal models
July 14 - 15, Stockholm, Sweden
https://www.comses.net/events/479/

DataONE Users Group Meeting: Building a Community of Scientific Data Repositories in an Open Science Landscape
July 16, Tucson, Arizona
https://www.comses.net/events/486/

5th Münster Workshop on Agent-based Modeling 2018
July 18 - 19, Münster, Germany
https://www.comses.net/events/482/

Vision, Decision and Leadership
July 23 - August 3, (Unknown)
https://www.comses.net/events/463/

Change Management and Evolutionary Theory
August 6 - 10, (Unknown)
https://www.comses.net/events/464/

PhD Colloquium at Social Simulation Conference 2018
August 19, Stockholm, Sweden
https://www.comses.net/events/487/

Social Simulation Conference 2018

August 20 - 24, Stockholm, Sweden
https://www.comses.net/events/481/

Computational Models in Archaeology
September 5 - 8, Barcelona, Spain
https://www.comses.net/events/470/

1st Workshop on Actors, Agents, Assistants, Avatars (4A'18)
September 9 - 12, (Unknown)
https://www.comses.net/events/468/

Agent-based models and computational economics @AMASES2018
September 13 - 15, Naples, Italy
https://www.comses.net/events/488/

Courses

Data lifecycle training workshop with the Datanet Federation
July 16 - 27, Chapel Hill, North Carolina
https://www.comses.net/events/477/

Computational Social Science Summer School on Conflicts
July 23 - August 3, Bremen, Germany
https://www.comses.net/events/469/

Humboldt State short course on individual/agent-based modeling
July 30 - August 3, Arcata, California
https://www.comses.net/events/475/

2018 Dresden short course in agent-based modeling
August 9 - 17, Dresden, Germany
https://www.comses.net/events/465/

BEHAVE Summer School on Agent-Based Modelling for Social Scientists
September 3 - 7, Brescia, Italy
https://www.comses.net/events/484/

MISS-ABMS 2018
September 10 - 21
https://www.comses.net/events/474/

Submission Opportunities

Winter School 2019 Agent-Based Modeling of Social Ecological Systems
September 1
https://www.comses.net/events/489/

Extending the Theory of Sustainability
September 5

https://www.comses.net/events/496/

CoMSES 2018 Virtual Conference
September 17
https://www.comses.net/events/490/

Model Library

New Model Uploads

Eighteen new models were uploaded this quarter, and there is the usual diversity in topics (from potato blight to peer review). Also of interest: there is a high diversity of modeling platforms. Out of the eighteen models, NetLogo was used for ten, but of the other 8 included: C++, .NET, AnyLogic, MatLab (2), GAMA, Java, and Python. This is a reminder of the diversity of our field- and also, potentially, of the rich resource for studying our field offered in the CoMSES archives, which now contain over a half-decade of model uploads encompassing a variety of topics, platforms, and modeling approaches.

Endogenous Corruption as a Cellular Automaton

Warren Vierhller | Published Wed Jun 27 07:12:38 2018

The model explores how corruption may spread endogenously within a closed society by depicting the behavior within a cellular automaton context (CA) between bureaucrats and citizens. Within the model, corruption is characterized as a behavior product dependent upon an individual's personal disposition towards honesty, rational decisionmaking processes, and neighbors' behavior.

An agent-based model to simulate the impact of developers' capital possession on urban development

Agung Wahyudi | Published Sat Jun 23 01:35:36 2018

The model combines agent-based modelling and microeconomic approach to simulate the decision behaviour of land developers and how this impacts on the spatio-temporal processes of urban expansion.

Unified Opinion Dynamics Simulator

Adam Coates | Published Wed Jun 20 06:32:45 2018

This is a simulator for the unified opinion dynamics framework, as developed by Adam Coates, Anthony Kleerekoper, and Liangxiu Han.

Zimbabwe Agro-Pastoral Management Model (ZAPMM): Musimboti wevanhu, zvipfuo nezvirimwa

Mv Eitzel Solera Kleber Tulio Neves Jon Solera Kenneth B Wilson Abraham Mawere Ndlovu Aaron C Fisher André VeskiOluwasola E Omoju Emmanuel Mhike Hove | Published Tue Jun 19 15:58:56 2018 (peer reviewed)

This model has been created with and for the researcher-farmers of the Muonde Trust (http://www.muonde.org/), a registered Zimbabwean non-governmental organization

dedicated to fostering indigenous innovation. Model behaviors and parameters (*mashandiro nemisiyano nedzimwe model*) derive from a combination of literature review and the collected datasets from Muonde's long-term (over 30 years) community-based research. The goals of this model are three-fold (*muzvikamu zvitatu*):
A) To represent three components of a Zimbabwean agro-pastoral system (crops, woodland grazing area, and livestock) along with their key interactions and feedbacks and some of the human management decisions that may affect these components and their interactions.
B) To assess how climate variation (implemented in several different ways) and human management may affect the sustainability of the system as measured by the continued provisioning of crops, livestock, and woodland grazing area.
C) To provide a discussion tool for the community and local leaders to explore different management strategies for the agro-pastoral system (*hwaro/nzira yekudyidzana kwavanhu, zvipfuo nezvirimwa*), particularly in the face of climate change.

Social Closure and the Evolution of Cooperation via Indirect Reciprocity

Simone Righi Károly Takács | Published Sat Jun 9 14:14:48 2018 | Last modified Sat Jun 9 15:11:49 2018

Righi S., Takacs K., Social Closure and the Evolution of Cooperation via Indirect Reciprocity, Resubmitted after Revisions to Scientific Reports

The Regional Security Game: An Agent-based, Evolutionary Model of Strategic Evolution and Stability

Anthony Skews | Published Sat Jun 9 09:18:25 2018

The Regional Security Game is a iterated public goods game with punishement based on based on life sciences work by Boyd et al. (2003) and Hintze & Adami (2015), with modifications appropriate for an international relations setting. The game models a closed regional system in which states compete over the distribution of common security benefits. Drawing on recent work applying cultural evolutionary paradigms in the social sciences, states learn through imitation of successful strategies rather than making instrumentally rational choices. The model includes the option to fit empirical data to the model, with two case studies included: Europe in 1933 on the verge of war and south-east Asia in 2013.

Endogenous changes in public opinion dynamics

Francisco J. León-Medina | Published Tue Jun 5 10:36:11 2018

The model formalizes a situation where agents embedded in different types of networks (random, small world and scale free networks) interact with their neighbors and express an opinion that is the result of different mechanisms: a coherence mechanism, in which agents try to stick to their previously expressed opinions; an assessment mechanism, in which agents consider available external information on the topic; and a social influence mechanism, in which agents tend to approach their neighbor's opinions.

Model of a Socioterritorial complex system - The Southern Rural Territory of Sergipe

Marcos Aurélio Santos da Silva | Published Fri May 18 13:42:06 2018

The model represents a set of social actors engaged into a collegiate (composed of representants of civil society and public sector) to manage the Southern Rural Territory of Sergipe (SRTS), created by two territorial public policies, the National Program for the Sustainable Development of Rural Territories (PRONAT) and the Program Territories of Citizenship (PTC) which aim at balancing power relations between social actors of Rural Territories. The main gola of these public policies is to empower the civil society engaged in the territory to enable them to negotiate with the traditional power (mainly majors). It was designed two models of the SRTS, one that represents the situation in 2012, and other that represents the social interdependencies in 2017. For each period it is possible to measure the capability and power of each modeled social actor and see whether it is observed the empowerment of the civil society or not.

An Agent-Based Simulation of Continuous-Time Public Goods Games

Tuong Vu | Published Thu May 17 10:39:29 2018

Simulations of Public Goods Games (PPGs) are usually in discrete time (one shot decisions about contributions to public goods). To our knowledge, this is the first simulation of continuous-time PGGs (where participants can change contributions at any time) which are much harder to realise within both laboratory and simulation environments. The simulation is from a journal article submitted to JASSS: Tuong Vu (2018). Overcoming the Hurdles of Continuous-Time Public Goods Games with A Simulation-Based Approach.

The paper shows how to apply our recently developed ABOOMS (Agent-Based Object-Oriented Modelling and Simulation) framework to create simulation-supported continuous-time PGG studies. The ABOOMS framework utilizes Software Engineering techniques to support the development at macro level (considering the overall study lifecycle) and at micro level (considering individual steps related to simulation model development). The case study shows that outputs from the simulation-supported continuous-time PGG generate dynamics generate dynamics that do not exist in discrete-time setting, highlighting the fact that it is important to study both, discrete and continuous-time PGGs.

The paper is a part of a PhD thesis. For further information, please read the attached pdf: Chapter 6 - Case study 3: Continuous-time settings.

Adaptive model of a consumer advice network

Peng Shao | Published Mon May 14 08:26:17 2018

In the consumer advice network, users with connections can interact with each other, and the network topology will change during the opinion interaction. When the opinion distance from i to j is greater than the confidence threshold, the two consumers cannot exchange opinions, and the link between them will disconnect with probability DE. Then, a link from node i to node k is established with probability CE and node i learning opinion from node k.

An agent-based simulation model characterizing the problem solving process of tournament-based crowdsourcing

wiseyanjie | Published Fri May 4 07:53:36 2018

A series of studies show the applicability of the NK model in the crowdsourcing research, but it also exposes a problem that the application of NK model is not tightly integrated with crowdsourcing process, which leads to the lack of a basic crowdsourcing simulation model. Accordingly, an agent-based simulation model characterizing the problem solving process of tournament-based crowdsourcing is constructed by combining “Task-Crowd-Process-Evaluation”(TCPE) framework with the NK model. By introducing interaction relationship among task decisions to define three tasks of different structure (local task, small-world task and random task), and introducing bounded rationality to define individual ability to differentiate professional users and ordinary users, the basic simulation model is extended to study the effects of task structure and individual bounded rationality on crowdsourcing performance.

Peer Review Game

Flaminio Squazzoni Federico Bianchi Francisco Grimaldo Giangiacomo Bravo | Published Mon Apr 30 10:42:49 2018

NetLogo software for the Peer Review Game model. It represents a population of scientists endowed with a proportion of a fixed pool of resources. At each step scientists decide how to allocate their resources between submitting manuscripts and reviewing others’ submissions. Quality of submissions and reviews depend on the amount of allocated resources and biased perception of submissions’ quality. Scientists can behave according to different allocation strategies by simply reacting to the outcome of their previous submission process or comparing their outcome with published papers’ quality. Overall bias of selected submissions and quality of published papers are computed at each step.

Transport simulation in a real road network

Jiaqi Ge Gary Polhill | Published Tue Apr 17 15:01:37 2018 | Last modified Tue Apr 17 15:06:43 2018

Ge, J., & Polhill, G. (2016). Exploring the Combined Impact of Factors Influencing Commuting Patterns and CO2 Emission in Aberdeen Using an Agent-Based Model. Journal of Artificial Societies and Social Simulation, 19(3). http://jasss.soc.surrey.ac.uk/19/3/11.html

We develop an agent-based transport model using a realistic GIS-enabled road network and the car following method. The model can be used to study the impact of social interventions such as flexi-time and workplace sharing, as well as large infrastructure such as the construction of a bypass or highway. The model is developed in Netlogo version 5 and requires road network data in GIS format to run.

Potato late blight model

Francine Pacilly | Published Fri Apr 13 13:40:47 2018

The purpose of the model is to simulate the spatial dynamics of potato late blight to

analyse whether resistant varieties can be used effectively for sustainable disease control. The model represents an agricultural landscape with potato fields and data of a Dutch agricultural region is used as input for the model. We simulated potato production, disease spread and pathogen evolution during the growing season (April to September) for 36 years. Since late blight development and crop growth is weather dependent, measured weather data is used as model input. A susceptible and late blight resistant potato variety are distinguished. The resistant variety has a potentially lower yield but cannot get infected with the disease. However, during the growing season virulent spores can emerge as a result of mutations during spore production. This new virulent strain is able to infect the resistant fields, resulting in resistance breakdown. The model shows how disease severity, resistance durability and potato yield are affected by the fraction of fields across a landscape with a disease-resistant potato variety.

TRUE GRASP

Marco Braasch Luis García-Barrios | Published Tue Apr 3 16:00:30 2018

TRUE GRASP (Tree Recruitment Under Exotic GRAsses in a Savanna-Pineland) is a socio-ecological agent-based model (ABM) and role playing game (RPG) for farmers and other stakeholders involved in rural landscape planning.

The purpose of this model is to allow actors to explore the individual and combined effects - as well as tradeoffs - of three methods of controlling exotic grasses in pine savannas: fire, weeding, and grazing cattle.

Design of TRUE GRASP is based on 3 years of socio-ecological fieldwork in a human-induced pine savanna in La Sepultura Biosphere Reserve (SBR) in the Mexican state of Chiapas. In this savanna, farmers harvest resin from *Pinus oocarpa*, which is used to produce turpentine and other products. However, long term persistence of this activity is jeopardized by low tree recruitment due to exotic tall grass cover in the forest understory (see Braasch et al., 2017). The TRUE GRASP model provides the user with different management strategies for controlling exotic grass cover and avoiding possible regime shifts, which in the case of the SBR would jeopardize resin harvesting.

Stoplight parrotfish population model

Tyler Pavlowich | Published Mon Apr 2 14:01:00 2018

This agent-based model simulates a stoplight parrotfish population in a heavily-fished Caribbean coral reef. The model allows for the simulation of various fishing regulations and observation of population and catch outcomes. It was built using the structure and equations from several previously published models, including the work of Bozec et al. (2016) and Alonzo and Mangel (2004 and 2005). The initial model conditions are parameterized to population and fishing data collected in Buen Hombre, Dominican Republic by Tyler Pavlowich.

The Thin Blue Line Between Protesters and Their Counter-Protesters

Tamsin Lee | Published Mon Mar 26 09:07:17 2018

More frequently protests are accompanied by an opposing group performing a counter protest. This phenomenon can increase tension such that police must try to keep the two groups separated. However, what is the best strategy for police? This paper uses a simple agent-based model to determine the best strategy for keeping the two groups separated. The 'thin blue line' varies in density (number of police), width and the keenness of police to approach protesters. Three different groups of protesters are modelled to mimic peaceful, average and volatile protests. In most cases, a few police forming a single-file 'thin blue line' separating the groups is very effective. However, when the protests are more volatile, it is more effective to have many police occupying a wide 'thin blue line', and police being keen to approach protesters. To the authors knowledge, this is the first paper to model protests and counter-protests.

High Standards Enhance Inequality in Idealized Labor Markets

Károly Takács | Published Tue Mar 20 22:06:05 2018

Takács, K. and Squazzoni, F. 2015. High Standards Enhance Inequality in Idealized Labor Markets. Journal of Artificial Societies and Social Simulation, 18(4), 2, http://jasss.soc.surrey.ac.uk/18/4/2.html
We built a simple model of an idealized labor market, in which there is no objective difference in average quality between groups and hiring decisions are not biased in favor of any particular group. Our results show that inequality in employment emerges necessarily also in such idealized situations due to the limited supply of high quality individuals and asymmetric information. Inequalities are exacerbated when employers have high standards and keep only the best workers in house. We found that ambitious workers get higher quality jobs even if ambition does not correlate or even negatively correlates with internal quality. Our findings help to corroborate empirical findings on higher employment discrepancies in high rather than low status jobs.

Most Downloaded Models in the Model Library

March 15, 2018 - June 20, 2018

The most downloaded models include a model of transportation by Jiaqi Ge and Gary Polhill, a model of societal norms and the spread of environmental awareness by Giovanna Sissa, a model of task focus in groups by André Grow, Andreas Flache, and Rachel Wittek, the venerable Hominin Ecodynamics model by the equally venerable C. Michael Barton, and Bruce Edmonds's model of making. Downloads for these five equalled the second-highest top-five total since records began, and the model in the fifth spot was downloaded more than the #5 model in any previous quarter.

1. (140 Downloads) Transport simulation in a real road network ***by*** *Jiaqi Ge* ***&*** *Gary Polhill*

2. (80 Downloads) A model of environmental awareness spread and its effect in resource consumption reduction ***by Giovanna Sissa***

3. (77 Downloads) An Agent-Based Model of Status Construction in Task Focused Groups ***by André Grow, Andreas Flache, and Rafael Wittek***

4. (73 Downloads) Hominin ecodynamics v.1 ***by C. Michael Barton***

5. (70 Downloads) A Model of Making ***by Bruce Edmonds***

We would like to thank the National Science Foundation for their support via grants (NSF BCS-0623162 and GEO-0909394 and IIS-1636796).
