



Evaluation Data Report

Investigative Workshop:

Modeling Social Complexity

February 6-8, 2012

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Modeling Social Complexity Workshop

Evaluation Data Report

Background

Introduction

This report contains evaluation data for a NIMBioS Investigative Workshop entitled “*Modeling Social Complexity*” (Complexity workshop), which took place at NIMBioS February 6-8, 2012. NIMBioS Investigative Workshops are relatively large (30-40 participants), focus on a broader topic or a set of related topics than Working Groups, attempt to summarize/synthesize the state of the art and identify future directions, and have potential for leading to one or more future Working Groups. Participants may include post-docs and graduate students with less experience in the particular topic than those participating in Working Groups.

The Complexity workshop comprised 43 participants, including co-organizers Peter Turchin, Dept. of Ecology and Evolutionary Biology, Univ. of Connecticut, Storrs; Laura Fortunato, Santa Fe Institute, Santa Fe, NM; and Sergey Gavrilets, Dept. of Ecology and Evolutionary Biology, and Dept. of Mathematics, Univ. of Tennessee, Knoxville

Organizer Pre-Workshop Description

The aim of this workshop, jointly sponsored by NIMBioS and NESCent, is to bring together a diverse group of modelers with anthropologists, archaeologists, and other social scientists to (i) synthesize the state of knowledge in formal models of the evolution of social complexity, (ii) identify unresolved issues, and (iii) set an agenda for future collaborative work. The workshop will be organized around the following general themes: What theories and data are available? What are the empirical patterns that cannot be explained by the existing theories and data? How can we adapt existing models to make full use of the available data? What kinds of data are needed to better inform the models? What new modeling techniques and methods need to be developed?

The great majority of humans today live in complex societies, which can exist only on a basis of extensive cooperation among large numbers of individuals. Ultrasociality, the ability of humans to cooperate in large groups of genetically unrelated individuals, presents a puzzle to both evolutionary and social theory. Its emergence likely involved the evolution of cooperation in small groups, characterized by an egalitarian social structure, followed by a reversal of this trend starting around 5–10 kya, with the rise of the first nonegalitarian complex societies. Theories to explain how complex societies evolved span the biological, social, and historical sciences, but they largely rely on verbal reasoning: until recently, formal models have focused on the evolution of cooperation in small groups, while the transition from small- to large-scale societies has been mostly neglected.

We aim to achieve a true dialogue between modelers and empiricists. Fortunately, comparative data are readily available in the anthropological literature to inform the model-building process and for empirical testing of model predictions. In modelling the transition from small- to large-scale societies, and the concomitant development of hierarchical social organization, these data can be used to extract clusters of factors that co-vary with degree of political integration, and which may therefore have driven this transition. The processes inferred from the synchronic data in cross-cultural samples can then be tested against the diachronic data in archaeological databases. Additionally, complete sequences of archaeological data for selected world regions can be used to investigate the extent to which the patterns and processes inferred from these worldwide samples generalize through time and space. The future development of this field need not be limited to existing databases: one of the workshop goals is to motivate archaeologists and anthropologists to develop additional regional sequences.

One of the immediate goals of the workshop will be publication of a special issue in a professional journal to be determined, which will include several reviews written by workshop participants. It is likely that a number of new research collaborations will be established at the workshop; additionally, we hope to identify an area at the interface of modelling and data analysis that would be most promising to tackle within a NIMBioS Working Group.

Organizer Post-Workshop Summary

The workshop started with a brief discussion of general goals and some conceptual issues, followed by five half-day sessions, each dealing with one of the general themes specified in the proposal. Session 1 focused on general patterns in the transition from small- to large-scale social complexity. Specific topics addressed concerned (i) the growth in the information-processing capacity of human beings, both individually and in groups, (ii) the driving forces and constraints in the evolution archaic states, and (iii) patterns of increasing social complexity in Neolithic societies. Session 2 dealt with general theories of growth of social complexity. Presentations focused on the roles of warfare, bureaucracy, on the applicability of population ecology methods, and on theoretical explanations of cyclicity in the evolution of societies. Session 3 summarized a variety of mathematical modeling techniques used for studying the evolution of social complexity. It also included several presentations with novel modeling developments focusing on the emergence of leadership, evolution of languages, cooperation and warfare. Session 4 focused on the data available to inform theoretical models of the emergence of human social complexity and test their predictions. Two of the presentations related to available cross-cultural archaeological, historical, and ethnographic data; the other three related to data from field-based projects with small-scale populations in Bolivia, Kenya, and India. Session 5 discussed possible approaches for merging dynamic and statistical modeling with data. It also summarized recent theories emphasizing environmental effects and multi-level selection. Each session ended with a general discussion. The participants identified several promising avenues for future work, both modeling and data-base oriented. After the conclusion of the workshop some participants took part in a public debate on the role of warfare in the evolution of early social complexity, which generated a lot of interest on campus.

Evaluation Design

Evaluation Questions

The evaluation of the workshop was both formative and summative in nature, in that the data collected from respondents was intended to both gain feedback from respondents about the quality of the current workshop and also to inform future similar meetings. Several questions constituted the foundation for the evaluation:

1. Were participants satisfied with the workshop overall?
2. Did the meeting meet participant expectations?
3. Do participants feel the workshop made adequate progress toward its stated goals?
4. Do participants feel they gained knowledge about the main issues related to the research problem?
5. Do participants feel they gained a better understanding of the research across disciplines related to the workshop's research problem?
6. What impact do participants feel the workshop will have on their future research?
7. What changes in accommodations, group format, and/or content would participants like to see at future similar meetings?

Evaluation Procedures

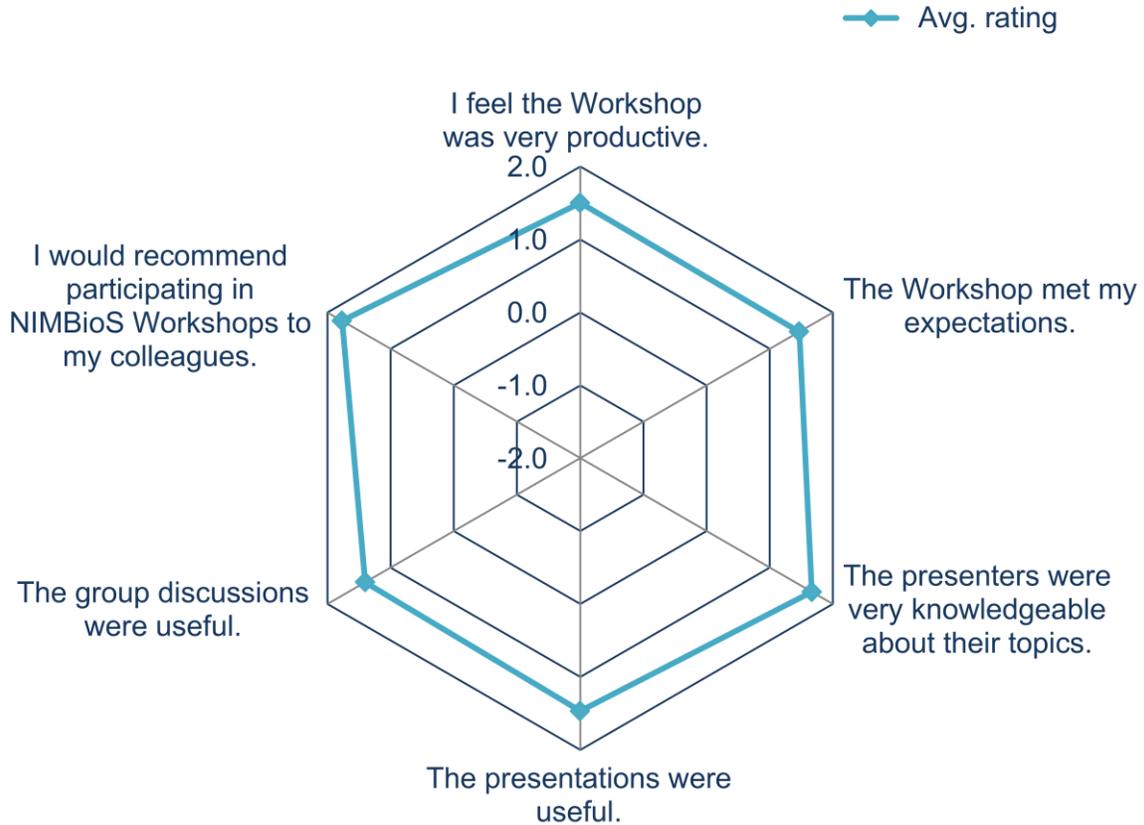
An electronic survey aligned to the evaluation questions was designed by the NIMBioS Evaluation Coordinator with input from the NIMBioS Director and Deputy Director. The final instrument was hosted online via the University of Tennessee's online survey host mrlInterview. Links to the survey were sent to 37 registered workshop participants on February 8, 2012. Five local participants who were considered "observers" and were not present for the entire workshop were not included in the evaluation. NIMBioS Associate Director Sergey Gavrilets was also not included in the evaluation. Workshop organizers were sent evaluation forms, but were only asked questions about (1) connections made with other workshop attendees and (2) satisfaction with the way NIMBioS handled their event. These data are internal to NIMBioS and not reported here.

Reminder emails were sent to non-responding participants on February 16 and 21, 2012. By February 28, 2012, 32 of the participants had given their feedback, for a response rate of 86%.

Evaluation Findings

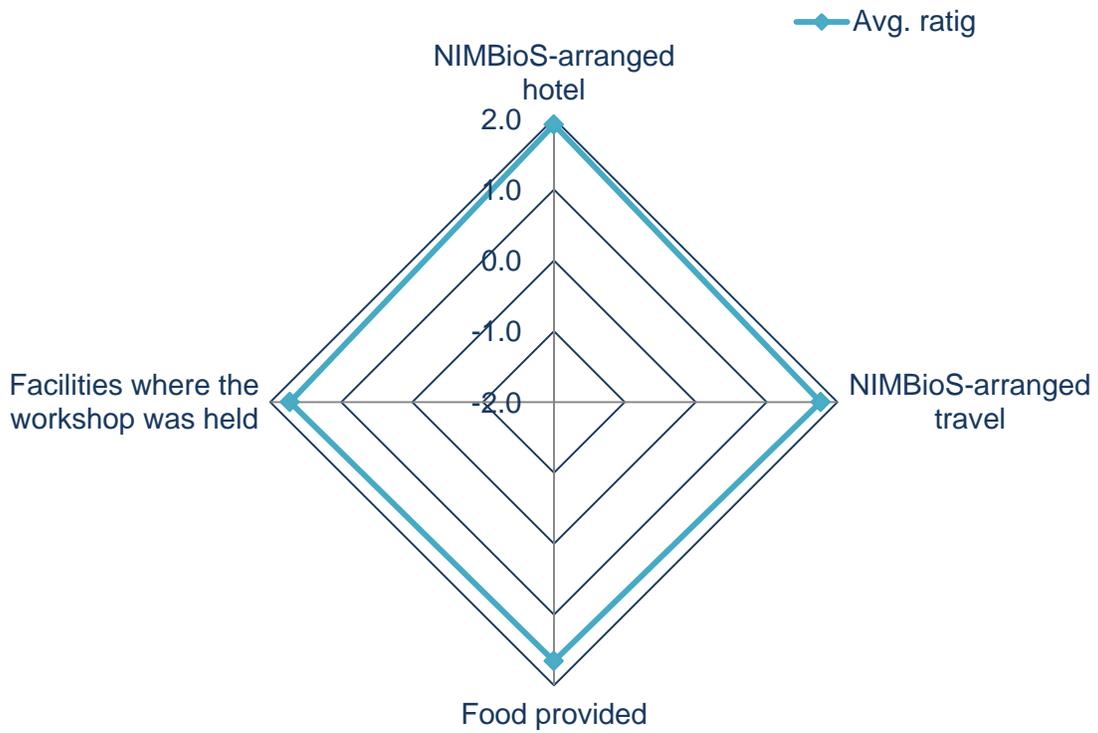
Overall Satisfaction

Figure 1. Satisfaction with various aspects of the workshop



Scored on a 5-point Likert scale from -2 to 2 for “strongly disagree” to “strongly agree”

Figure 2. Satisfaction with accommodations



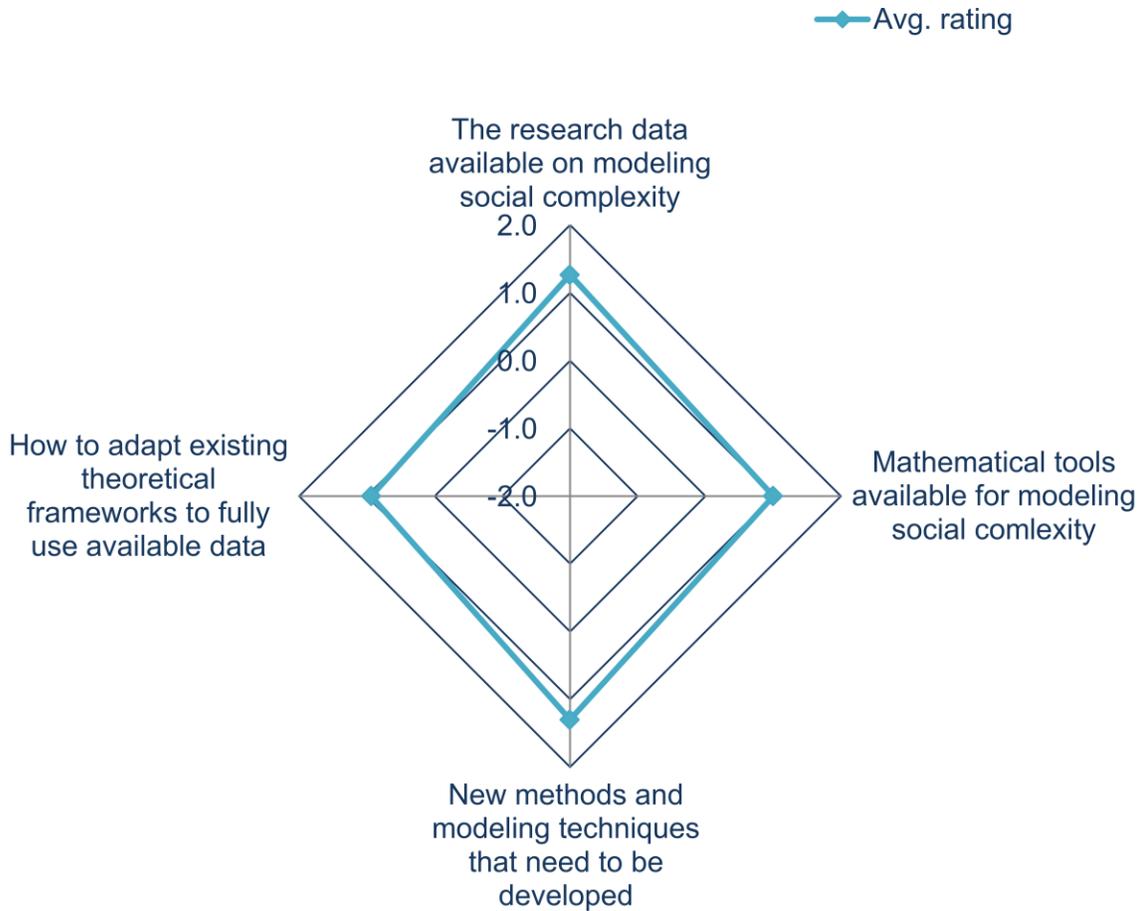
Scored on a 5-point Likert scale from -2 to 2 for “very dissatisfied” to “very satisfied”

Workshop Content and Format

Participant Learning

Figure 3. Participant learning

As a result of attending this workshop, I have a better understanding of:



Scored on a 5-point Likert scale from -2 to 2 for “strongly disagree” to “strongly agree”

Figure 4. Do you feel that participating in the Workshop helped you better understand the research going on in disciplines other than your own regarding the workshop's topic?



Comments

Excellent to bring together so many disciplines. A bit of ice-breaking at the start, introductions, a group dinner or some sort of social event would have been nice.

I think the strong multidisciplinary nature was probably the workshop's greatest asset.

I truly wish the workshop would have been 3 or even 4 days, rather than only 2. The potential for discussion and collaborations was only (for me anyway), beginning on day 2, with only one-half day left on day 3.

It was a great experience for me to be at the workshop, though the topics presented were not directly connected to my research area, still I got new ideas to be explored further in my research life.

Over the years I have been involved in other, similar efforts. This was among the most productive of them all, largely because of the careful selection of the organizers, and their own creative engagement with the group.

The workshop was highly integrative and widened my perspective on the topics under investigation. I would have loved to have structured time for small break-out groups each afternoon rather than doing this all as a large, single group at the end of sessions of lectures. This would have promoted active learning and facilitated the emergence of new ideas.

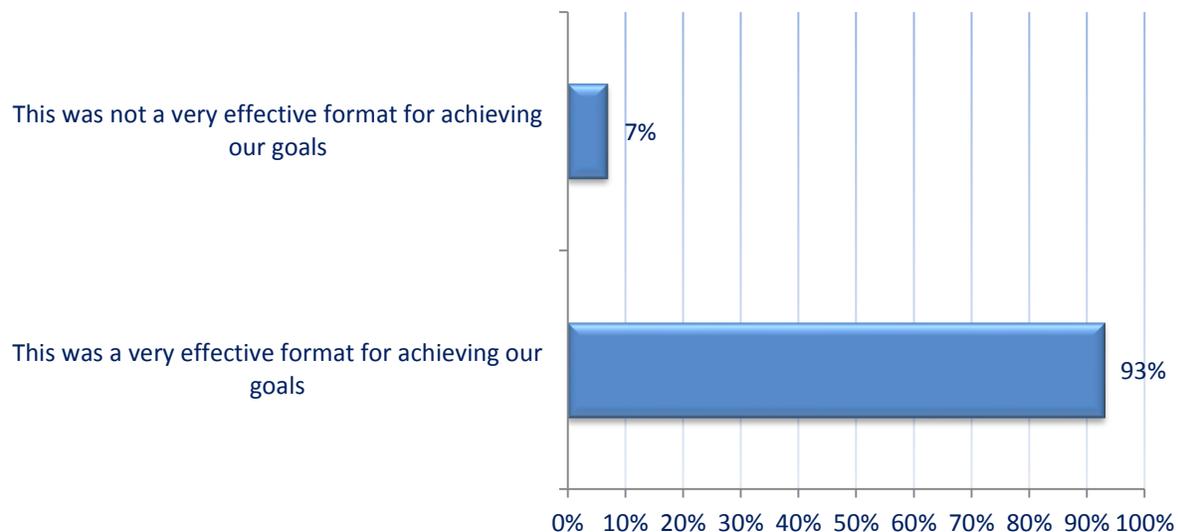
This is clearly an exciting area, and I'm very glad to have participated.

This was in my opinion a very successful workshop - I learned a lot across many disciplines and have a better idea of where this field might go.

Though it would have been interesting to hear more from the animal researchers about how eusociality evolved.

Workshop Format

Figure 5. Effectiveness of workshop format



Format could be improved if:

The talks had been more targeted, addressing specific pre-assigned questions that contributed systematically to the broader question of the evol. of social complexity.

Most Useful Aspects of Workshop

A number of the very good presentations about different approaches, including (but not exclusively) modeling approaches.

A relatively small group of knowledgeable people who were open to listen and discuss.

Apart from, obviously, meeting new people, its most useful aspect was its diversity. Not just that the participants came from many disciplines, but also that they represented all stages of the academic cycle from undergraduate to senior faculty and all degrees of prior immersion in the topic of modeling social complexity.

Discussion of future data collection and theory development.

Fruitful dialog between researchers of different scientific disciplines.

Getting to interact with diverse and experienced researchers and getting new ideas for future directions.

Hearing the presentations, and the discussion following the presentations in which questions and issues were laid out.

Informal conversations emerging at the coffee breaks were actually the most useful. In these contexts, folks were able to bring together a diverse set of perspectives and ask questions as needed for clarification or to interject new ideas! Having links on the website to follow-up on the papers provided during the workshop will also be extremely helpful because the workshop went SO fast! I loved it.

Interdisciplinarity.

Meeting the people.

Presentations from different perspectives.

Talking directly with other researchers face-to-face (either during breaks or in the evenings).

Talking to people from different disciplines.

The ability to network with and interact with other scholars in different fields.

The breadth of approaches to the problem at hand that were represented and collective ability of the participants to translate from one to the other.

The caliber of the participants.

The discussions.

The discussions.

The great part was really the group of different people, from many different fields, but most of them already interdisciplinary in some way, so that you got a variety of perspectives, but no gulf between them. The vast majority of talks was great, and fit together well.

The mix of empirical and modeling presentations, matched to a mix of senior and junior investigators.

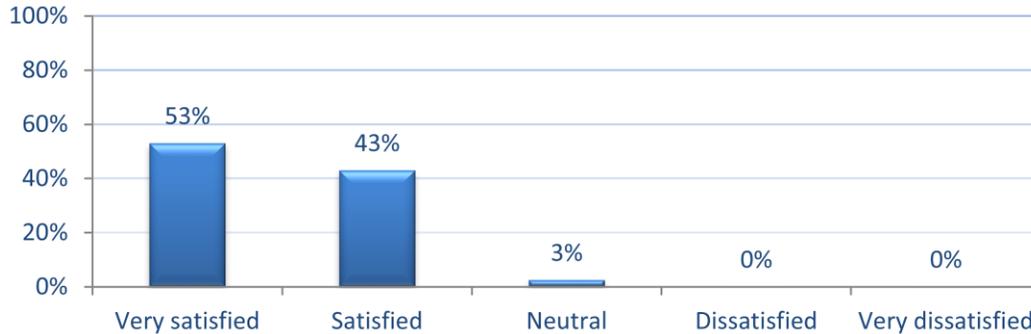
The organizers got together a group with enough commonalities that we could make good progress, without it being so homogeneous that there was nothing new or interesting

The presentations.

To see what the hot topics are in the realm of the subject from other disciplines.

Communication

Figure 6. How satisfied were you with the opportunities provided during workshop presentations and discussions to ask questions and/or make comments?



Comments

As indicated earlier, it wasn't possible for everyone to speak in the discussions (too many people, too little time) so it tended to be the most senior or most aggressive individuals that would dominate all of them. Occasionally the moderator (or scribe) would spend too much time expounding on some topic, leaving less room for discussion. If it were possible to somehow break people up into smaller groups, or only let people speak once, it might help.

Even more discussion time would be helpful

Have a directory of participants with a description of their research interests

Longer discussion periods. Several people dominated the discussion. Maybe some other techniques such as break out groups could have been used to good effect. Some of the more junior researchers had really excellent viewpoints, but did not feel confident enough to express them to the whole group, especially when they were disagreeing with the prominent viewpoints.

More small group or "break-out" sessions to digest all of the material and to identify future collaborations would have been great, but we made the best of the limited time available. Overall, it was great!

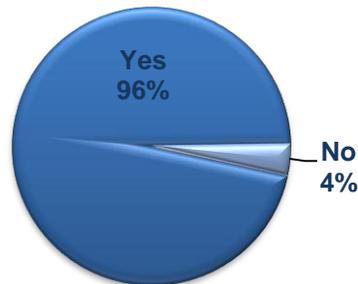
Organization was excellent. In addition to the suggestion for 1 or 2 days more for workshops, I would suggest somehow enforcing talk lengths a bit more. Most people went over, some by a lot, and sometimes this substantially reduced the messages intended by the speakers

Small-group discussions

Structured small group discussion

Progress Toward Goals

Figure 7. Do you feel the workshop made adequate progress toward finding a common language across disciplines for research on the workshop's topic?



Comments

All of the ideas were straightforward and understandable as presented/discussed.

Good start!

I feel like we made strides in this area, but that we still failed to nail down some definitions.

I hope the wiki is updated!

Of course, this was 2.5 days and we have been working on some of these subjects for over a century. Much better than average progress was made, but we don't have to worry that all of this will be solved in the near future.

This was a first workshop. There is still a lot to be done, but a good beginning was made!

We did not really focus on finding a common language, but I honestly didn't see semantics interfering with communication across disciplines, so I don't think that was a problem.

Impact on Future Research Plans

Figure 8. Do you feel that the exchange of ideas that took place during the workshop will influence your future research?



Comments

Both the empirical and theoretical content of the workshop will be very helpful in future writing and model development.

But the extent of that influence will depend on the extent to which I can interest graduate students in collaborations arising from the Workshop.

Definitely, because several new perspectives now contribute to my better understanding, particularly from biology and evolutionary theory.

I suppose there is the sheer and only slowly dissipating exhilaration of seeing such creative colleagues, to begin. Then there are all of the more substantive points of information useful on technical and mechanistic levels. Finally, it is so valuable to know how my particular approach sits relative to the wider variety of research traditions out there.

I've rethought some of what I previously thought on this topic, which has been very helpful. The workshop helped me to figure out how some areas of my research that I had thought to be connected might be connected.

It isn't a main focus of my research, but I feel like if any collaboration does get off the ground, I might be interested in developing more along these lines.

It relates quite well to a new research project in which I am involved.

Some of the presentations had nice mathematical ideas that gave me insight and some direction for the application of the project I am working on.

The ideas widened my perspective and gave me a new set of tools for asking questions through collaborations.

Impact on Future Collaborations

Figure 9. Did you develop plans for collaborative research with other Workshop participants?



Comments

Although I did not develop definitive plans, the Workshop was a fertile source of ideas (which I need time to mull over). Most importantly, I met several potential collaborators. Whether they become actual collaborators primarily depends on whether I can also interest my (present or future) graduate students.

As a result of my presentation I was approached by one of the organizers and asked if I would be interested in thinking more concretely about collaboration.

Data sharing and modeling of cultural transmission processes.

I exchanged ideas with other participants; whether these will turn into plans I'm not sure.

I had three conversations there about possible collaborations; we'll see where those go.

I have had several exchanges with different folks about this and expect to produce papers as a result of these conversations after the workshop. I am also interested in participating in a working group in the future to explore some of these topics in more detail.

I want to emphasize the sometimes unappreciated elements of collaboration that are achieved in a setting like this: I have a small set of very interesting and useful papers from participants, which I would not likely have encountered otherwise. I have requests for some of my published and unpublished work from participants, who otherwise would not likely have known of them. I know of a dozen or so new folks who can give me feedback on my work. A named grant or

follow-on workshop is an obvious product. These kinds of less formal relationships I believe to be equally important. They flourished at this meeting.

Not yet very specific, but something will come out of this.

One of my grad students and I are in discussions with another participant to propose a working group.

Our research group was inspired by models presented at the workshop, which we hope to extend in some new directions.

There is some talk of maybe writing a review paper, but no firm plan yet.

This could have happened with a longer workshop.

We plan to build on a simulation that was discussed at the workshop.

Working to finalize details/information.

Working with a modeler to test a hypothesis derived from the workshop.

Suggestions for Future workshops

3 or 4 day meeting. Perhaps narrow the thematic spectrum of talks.

Allow a bit more time (perhaps 10 min more) for each presentation.

Allow for slightly longer presentations, by 5-10 minutes.

Being from a different field (mathematics), it was somewhat hard for me to relate to the workshop topics on the first day of the talk as it was too filled with all the biology, history and anthropological stuff. I would have appreciated more if it could be more balanced towards every field.

Break into working groups to develop proposals for future data collection and theory development.

I did feel like Ecology & Evolutionary Biology (my own field) was a bit underrepresented somehow, not in terms of numbers of invitees but more in terms of focus, both in the talks and the discussions. I also felt like the discussions, though sometimes interesting, were often quite unfocused. It might have been better to have smaller discussion groups somehow, though you want to somehow break up by topic and not by field. It seemed to be always the same people talking (mostly older men).

I invite more "pure" theoreticians to present more tools available for use in the modeling.

I suggest that the group be told they will be invited back in three years, in order to demonstrate progress that they have made based on this first meeting. This puts some pressure on folks to live up to all of the talk about product. There was, many years ago, a Condon series (mostly for natural/physical scientists), which insisted that these seminars come in sets of three, over 9-10 years, with the same objective. My sense was that it worked quite well.

I would have loved to have structured time for small break-out groups each afternoon rather than doing this all as a large, single group at the end of sessions of lectures. This would have promoted active learning and facilitated the emergence of new ideas.

Longer discussion, fewer specific research talks, more general perspectives from different disciplines.

Maybe have a third full day instead of a half day as we did not get to talk much about the presentations on the last day.

Maybe other people have different schedules, but the timing (Monday to Wednesday) messed up my teaching schedule.

More concentrated discussions.

More discussion time.

More structured discussion, perhaps breaking into smaller groups at times talks could have been arranged in a more logical order.

Not much. Perhaps have more technical talks.

Slightly more presentations from the younger scholars, and slightly fewer from the more senior. Perhaps one or two more mid-career people; we seemed to have the two ends of the age spectrum.

Small-group brainstorming, rather than brainstorming in one, large group.

Structured smaller group time.

The coffee ran out for about an hour or so on day 3, which is dangerous.

The extended abstracts are in some form also statement papers. It might be therefore nice to have a discussant.

Additional Comments

Disappointed that the working groups discourage graduate student participation. While I understand the reasoning, working groups and collaborations are how younger researchers can begin to build their reputation and gain experience.

Great workshop, I enjoyed it. Congratulations to the organizers!

I really enjoyed the workshop which gave me much food for thought. Many thanks to the organizers!

One of the best workshops I've ever attended! Thanks!

Overall, I really enjoyed it!

Thanks very much for supporting this initiative!

This was excellent introduction to NIMBioS! I certainly would like to participate in the future in a more detailed working group where we can actively collaborate with folks during the on-site visit. This workshop was a great introduction to what is possible and now that new collaborations have been identified, I want to move forward on them!

Appendix

Modeling Social Complexity Workshop Evaluation Survey

Modeling Social Complexity Workshop Survey

Thank you for taking a moment to complete this survey. Your responses will be used to improve the workshops hosted by the National Institute for Mathematical and Biological Synthesis. Information supplied on the survey will be confidential, and results will be reported only in the aggregate.

Please check the appropriate box to indicate your level of agreement with the following statements about this workshop: (Very satisfied, Satisfied, Neutral, Dissatisfied, Very dissatisfied)

- I feel the workshop was very productive.
- The workshop met my expectations.
- The presenters were very knowledgeable about their topics.
- The presentations were useful.
- The group discussions were useful
- I would recommend participating in NIMBioS workshops to my colleagues.

Please check the appropriate box to indicate your level of agreement with the following statements. As a result of participating in this workshop, I have a better understanding of: (Strongly agree, Agree, Neutral, Disagree, Strongly disagree)

- The research data available on the workshop's topic
- Mathematical tools available for modeling social complexity
- New methods and modeling techniques that needs to be developed
- How to adapt existing theoretical frameworks to fully use available data

Do you feel participating in the workshop helped you better understand the research going on in disciplines other than your own on the workshop's topic?

- Yes
- No
- Comments:

Do you feel the workshop made adequate progress toward finding a common language across disciplines for research on the workshop's topic?

- Yes
- No
- Comments:

Do you feel that the exchange of ideas that took place during the workshop will influence your future research?

- Yes
- No
- Possibly
- Comments:

Did you develop unanticipated plans for collaborative research with other workshop participants?

- Yes
- No
- Possibly
- Comments:

What do you feel was the most useful aspect of the workshop?

What would you have changed about the workshop?

How do you feel about the format of the workshop?

- This was a very effective format for achieving our goals
- This was not a very effective format for achieving our goals ->
- The workshop format would have been more effective if:

How satisfied were you with the opportunities provided during workshop presentations and discussions to ask questions and/or make comments?

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very Dissatisfied

Please indicate any suggestions you have for facilitating communication among participants during the workshop:

Please use this space for additional comments: