

TERAA

Morelia Technical Meeting

17/08/2015 – 22/08/2015

This report will summarize the main activities, products, analysis and findings developed during the last TERAA meeting of the year 2015.

Day 1 (17/08/2015) – Introduction & Update.

During this first day the team reviewed our original objectives, research questions, and deliverables which were:

General Objective.

We aim to generate new empirical knowledge to advance understanding of team dynamics and improve the current science-policy interface.

Specific objectives.

1. To identify individual agent attributes and team structure characteristics that positively or negatively influence team research outcomes.
2. To analyze relations between individual agent variables, group structure variables, and possible team research outcomes.
3. To develop an agent-based conceptual framework grounded in empirical data to represent the complex relations between team dynamics and team research outcomes

Research Questions.

Which team member attributes/characteristics lead to ID and TD team research outcomes that successfully bridge the knowledge-action gap?

How do individual team member attributes interact to influence ID and TD team research outcomes?

Deliverables.

- 1) Individual and team profiles with systematized characterizations of the attributes of team members and overall teams based on empirical data collected through IAI case study review, surveys, and interviews;
- 2) A conceptual framework to characterize team members and overall team characteristics, interactions, and possible outcomes;
- 3) A future grant proposal to support long-term research funding for an expanded project based on the research conducted during the seed-grant project;
- 4) Standards for effective ID and TD research; (ADRIFT – not possible in one year; beyond the scope of a seed grant project)
- 5) A peer-reviewed publication on our findings in an international journal.

6) A project website to inform scholars, practitioners, and the public of project advances and preliminary results.

After reviewing our original aims and questions the team was updated on the advances of our research and data collection. The results from the interviews, survey, and social network analysis were presented orally supported by ppt's.

Up to this point our mixed methods approach obtained information from the following sources:

- Survey (n=51)
- Interviews (n=20)
- Social Network Analysis (SNA) (n= 28 documents)
- Self-reflections
- Document Analysis
- Scenarios
- Field Observations

Our final study sites represent 22 ID & TD ongoing and completed projects (seedgrants, small grants, & collaborative research networks) funded by the Inter-American Institute for Global Change Research. Our sample represents 51 junior, middle and senior scientists and policy makers from 17 different countries.

During the late afternoon the team worked on integrating all these pieces of information and findings into a single framework through the design of the seminar that would be presented the following day at UNAM's Instituto de Investigaciones de Ecosistemas y Sustentabilidad.

Four main findings were established based on the multi-methods approach data gathering:

Finding	Supporting Evidence
1. Affective and cognitive dimensions were identified as important for effective teamwork across all three levels of outcomes.	Surveys Interviews
2. Science outcomes are prioritized over policy and SES outcomes due to institutional constraints, time constraints, and financial constraints.	Interviews Surveys
3. Team members recognize the need to bridge the natural and social sciences, but in practice tend to be unable to achieve this integration.	Surveys Interviews Social Network Analysis
4. Long-term, engaged interactions in interdisciplinary team research may contribute to cognitive transformation and the emergence of conceptual innovation	Surveys Interviews Social Network Analysis

Day 2 (18/08/2015) – PPT design & IIES Morelia Seminar, Small Grant, CG-CN-AF Chart Revision.

PPT design & IIES Morelia Seminar:

During the morning of the second day the team continued to work on the PPT presentation of findings for the Instituto de Investigaciones en Ecosistemas y Sustentabilidad and at 12 the the seminar was presented by Lily and Gabriela. Ten people assisted the seminar and it was video recorded. Please access the PPT of the presentation through the following link [PPT Morelia Findings](#). The video was going to be forwarded to us by the coordinators of the seminar sessions and will be uploaded to our website as soon as we receive it.

Small Grant:

After the seminar the team devoted a couple of hours to discuss the advances related to the upcoming small grant proposal. Gabriela and Martín met with Marcella on the 13th of august and put forward an initial idea that was very well received by Marcella under the following lines:

The existing tension between the need for diverse worldviews and the conflicts that arise from the clash between them poses the question of how can these conflictive situations be channelized towards positive and innovative pathways towards deliberate transformations. Based on our 5 findings (or how many findings we decide to leave), our team has set out to pursue the design of a larger grant proposal that attends to this question. Based on action-research approach, the grant would look further into teamwork through social network analysis and into how team science and co-production of knowledge literature can be transformed into practice through the design and implementation of innovative and experimental capacity building curricula for complex socio-ecological systems research. This research would aim to transcend knowledge frontiers on examining the changing morphology of teams in terms of power dynamics within the teams, cross-cultural collaborations, and dispersion of technology. Through experimental actions, process driven evaluations and assessments, the research would obtain valuable information on what kind of conflict resolution and facilitation pathways may produce more collaborative and multi-cultural research teams that can effectively generate practical solutions to real world problems.

More details can be found in the following files:

[Draft for Small Grant Meeting with Marcella](#)

[Whiteboard notes for Small Grant 1](#)

[Whiteboard notes for Small Grant 2](#)

[Whiteboard notes for Small Grant 3](#)

CG-CN-AF Factors Chart Revision:

During the late afternoon and based on the empirical data gathered the CG-CN-AF chart was revised as well as the 12 success factors.

The original 12 factors prioritized by the survey data were the following:

1. Previous experience with the team members
2. Face to face interaction
3. Joint training activities

4. Trust
5. Strong leadership from the PI
6. Strong leadership shared by the PI and Co-PIs
7. Presence of a mix of physical scientists, social scientists, and engineers, on the team
8. Presence of practitioners and stakeholders on the team
9. Academic incentives
10. Policy incentives
11. Prestige of the team
12. Openness of team members to take risks

From the revision of this table and using qualitative information from the interviews the following systematization table was designed: [Conceptual Framework Revision](#).

Through the revision of the empirical data, new factors emerged and some of the initial hypothetical factors seemed to be very weak in terms of supporting evidence. The new factors that emerged from the empirical data are the following:

- Openness to Learning.
- Common language at the team level.
- Effective collaboration between team members.
- Presence of Negotiators/Facilitators that can channelize conflictive situations towards positive outcomes (deliberate transformation/constructive conflict resolution/innovation through the clash of different cultural perspectives or communities of practice).
- Presence of Knowledge Brokers/Bridgers.
- Network Creation.
- Role of Students.
- Level of effective integration of Nat-Soc Sciences (not just the presence but effective integration).
- Empathy.
- Financial Constraints.
- Institutional Constraints.
- Time.
- Common Focus.
- Topics/Interests that intersect.
- Commitment to work.
- Epistemological openness to other perspective vs closedness.
- Professional Development of Students.

Finally the CG-CN-AF chart was reviews based on the empirical data gathered. The original chart designed and supported by literature is the following:

Factors	Individual			Team		
	Cognitive	Conative	Affective	Structure	Function	Composition
Previous experience with the team members			x		x	
Face to face interaction	x				x	
Joint training activities			x		x	
Trust			x		x	
Strong leadership from PI	x			x		
Strong leadership shared by the PI and Co-PIs	x			x		
Presence of a mix of physical scientists, social scientists, and engineers	x					x
Presence of practitioners and stakeholders		x			x	
Academic incentives		x				x
Policy incentives	x			x		
Prestige of the team		x				x
Openness of team members to take risks			x		x	

The new chart that emerged from the empirical gathering and after the teams discussions was restructured as follows:

Factors	Individual			Team		
	Cognitive	Conative	Affective	Structure	Function	Composition
Previous experience with the team members			x		x	
Face to face interaction			x		x	
Joint training activities	x				x	
Trust			x		x	
Strong leadership from PI	x			x		
Strong leadership shared by the PI and Co-PIs	x			x		
Presence of a mix of physical scientists, social scientists, and engineers	x					x
Presence of practitioners and stakeholders	x				x	
Academic incentives		x				x
Policy incentives		x		x		
Prestige of the team		x				x
Openness of team members to take risks	x				x	

Day 3 (19/08/2015) – 1st Paper Outline, Team and Individual Profiles, Structuring Final Report.

1st Paper outline:

During the morning and early afternoon the team worked on outlining the structure of the 1st potential paper of the research. The abstract follows:

Title: A Lot of Smoke, but No Fire: Analyzing the Gap between the Rhetoric and Practice of Interdisciplinarity for Sustainability Challenges

Abstract: Sustainability science is becoming increasingly a focus of interdisciplinary (ID) teams, composed of members from multiple physical science and social science disciplines. These teams are driven to bridge existing disciplinary divides and produce socially relevant outcomes to navigate through complex global change problems, among others. However, limited work has addressed how these teams effectively negotiate disciplinary boundaries, translate science into policy, and achieve visible on-the-ground solutions. Combining research in the fields of social-psychology and science of team science, this research introduces an innovative conceptual framework to examine ID teamwork through individual team member characteristics (cognitive, conative, and affective) and collective team attributes (structure and composition). We present empirical data collected through a mixed methods approach including surveys (n=45), interviews (n=20), and social network analysis based on team project documents (n=28) from 23 interdisciplinary team research projects from across the Americas. The integrated analysis of data illuminates four findings: 1) Affective and cognitive dimensions were identified as important for effective teamwork across all three levels of outcomes; 2) Science outcomes are prioritized over policy and SES outcomes due to institutional constraints, time constraints, and financial constraints; 3) Team members recognize the need to bridge the natural and social sciences, but in practice tend to be unable to achieve this integration; 4) Long-term, engaged interactions in interdisciplinary team research may contribute to cognitive transformation and the emergence of conceptual innovation. This research contributes to understanding the existing gap between rhetoric and practice in ID teamwork for sustainability science.

Key Words: Interdisciplinarity; team science; global change; science-policy-action interface; Americas

Journal: Environmental Management.

Team and Individual Profiles:

After lunch the team jumped into designing team and individual profiles. Even though we do not have yet any solid supporting evidence for each profile, we can generate hypothetical profiles derived from the evidence gathered.

In this sense some advances were made. At an individual level and based on CG-CN-AF elements 7 potential profiles were put forward:

1. Thinkers (High CG).
2. Doers (High CN).
3. Feelers (High AF).
4. Bridgers (High CG-CN-AF).
5. Specialists (based on interview data, people who are highly specialized and do not feel comfortable outside their own CG limits).

6. Holistics (based on interview data, people who have the capacity to see the big picture and do not have a high CG specialization level).
7. Darth Vaders (Low CG-CN-AF).

At a team level, the following classification was put forward based on data obtained from the Social Network Analysis and the scenario survey answers:

1. Cohesive teams.
2. Fragmented teams.
3. Networked teams.
4. Subgroup teams.

Structuring Final Report:

The final report to deliver to the IAI was revised at the end of the afternoon and remaining gaps were identified to deliver the report in time. The main sections of the report where significant work will be required were the following: Section 3 (findings), section 12 (Main Conclusions), section 16 (Observations on the IAI program). Based on the requirements the structure for section 3 was agreed and will be guided and follow our general objective, specific objectives, and promised products or deliverables (see section 1 of this report).

Day 4 (20/08/2015) – Progress on Individual Profiles, Patricia Balvanera Meeting, Kathy Halvorsen Meeting, Outline of Paper 2, 3 & 4.

Individual Profiles:

During Thursday morning the individual profiles were further developed and an initial detailed list of profiles and possible CG-CN-AF combinations was elaborated and can be visualized and read in the [Individual Profiles](#) document. The idea of developing and infographic of each of these individual profiles was put forward and will have to be developed in the future in order to upload into our website. Also the idea of developing a Meyer-Briggs type test to diagnose the possible personality characteristics of team researchers. It would be important to note that individuals can change in time and not always be one or another profile. The idea of the test is to produce information that can help researchers bear in mind their own abilities and limitations in order to work on them and transform their own way of thinking, feeling and doing if it is they wish to do so. Also if this test can be developed, further research can be designed to understand how the combination of profiles can enable or constrain different outcomes of teamwork.

Patricia Balvanera Meeting:

At 11 am the team met with Patricia Balvanera, researcher from UNAM who is conducting very similar research to our own. The ppt's of the meeting were not shared by Dra. Balvanera, so we only have access to our notes. The main items that were extracted for our own research and future grant were the following:

- Negotiation processes to agree on the use of different methodologies to compose mixed-methods approach is worth researching and very little information has been produced in this sense in the general literature.
- Constructive conflict resolution processes and deliberative pathways within teams may hold a very important key for securing successful action-research outcomes. Check Beatriz Biggs (Instituto Internacional de Facilitación y Cambio Social) and Aldo Leopold Leadership Network.
- Our individual and team profiles are of great importance and should be further developed after revising existing profiles in literatura ([Cheruvelli](#)).
- Process driven evaluations and assessments need more research and could prove to hold great benefits towards generating improved collaborations in multi-cultural and diverse practice communities research teams.

Kathy Halvorsen Meeting:

After Balvanera's meeting our team had an online meeting with Kathy Halvorsen to revise our latest findings and next steps. The main points of the discussion were the following:

- Revise the first sentence of the summary.
- Change the graphs in the ppt to tables for our findings paper.
- Generate another paper exclusively on the use of SNA in our research.
- Revise the journals we were aiming to publish in.
- Continue in the general lines of our small grant.
- Not include the productivity graphs in the SNA paper, only networks.

Outline of Papers 2, 3 & 4:

After the meeting with Kathy, two more papers emerged and general outlines were set for each one:

<p>Paper 2: SNA Paper Combine Findings 3 + 4 and SNA Methods (Target Journal: <i>Regional Environmental Change</i>) <u>Priorities:</u> Working Title; Abstract; Outline</p>	<p>Martin & Jeremy lead (But all 7 team members will be authors for publication)</p>	<p>High Timeline: Manuscript submitted for review by December</p>
<p>Paper 3: Meta Analysis of Team Research Literature (Individual and Team Profile Typologies would be part of this) (Target Journal: <i>Small Group Research - SciTS Journal</i>) *We are thinking this paper could be</p>		<p>Medium Timeline: Manuscript to be submitted in Spring 2016</p>

worked on while working on the Small Grant Application because we will need to review more literature)		
<p>Paper 4: Teams as Complex Adaptive Systems (Panarchy Model)</p> <p>(Target Journal: <i>Ecology & Society</i>)</p> <p><u>Priorities:</u> Title, Abstract, Outline</p>	Lily & Jeremy lead	<p>Medium</p> <p>Timeline: Manuscript to be submitted in Spring 2016</p>

Day 5 (21/08/2015) – Progress on Team Profiles, Short Article for External Website, To Do List, Budget Update.

Progress on Team Profiles:

During the morning of the last day progress was made in building a matrix to systematize and develop team profiles. Click on the table to access an editable document.

TEAM PROFILES		Experience Diversity			Communities of Practice Diversity			Cultural Diversity			Disciplinary Diversity		
		Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High
Modular	Yes												
	No												
Core-Periphery	Yes												
	No												
Fragmented	Low												
	Med												
	High												
Cohesive	Low												
	Med												
	High												

Short Article for External Website:

The team was invited to publish a short review of our work and share our website in a Brazilian website run by two oceanographers and one marine biologist that focuses on showcasing scientific information related to coastal management for non-scientific public. An short article will be written and sent together with our website.

To Do List:

A to do list was developed Friday morning to channel our next steps towards the completion of all our deliverables. [To do list](#).

Budget up-date:

Given the fact that we have remaining budget for a total value of USD 1850, we sent an email to Marcella and asked for the following:

Our project's end date is September 14, 2015. We have a plan to spend the extra money, but would like to ask your approval for the change in the spending plan and to ask for an extension to finish spending the money.

Immediately (before the September 14th deadline), we would like to spend \$650 of the remaining funds to cover the cost of an additional year's subscription to Adobe Connect

communication software to continue facilitating our team's meetings for preparation of publications and grant applications and to buy a web domain name for our project website.

The extension would be needed for the remaining \$1,200. We are preparing a manuscript for publication in the Ecology and Society journal. This journal is open-access and charges a publication fee of \$1,200. This fee would be due when our manuscript is accepted for publication.

Is an extension for the \$1,200 possible? Or, should we find more immediate ways to spend this money before the September 14 deadline?

Conclusion:

During this past week the TERAA team has done enormous progress. In terms of deliverables the following achievements were made:

1. Profiles: Hypothetical Individual and Team Profiles were put forward and their corresponding analysis matrixes.
2. Conceptual framework: The original conceptual framework was revised based on the empirical information gathered through our mixed-methods approach. A new graphic representation that includes the new data must be developed.
3. Future grant proposal: An initial document was started, discussed and general agreement was established as for the lines that the future small grant will follow. The grant document still remains to be written.
Teamwork for Effective Research Action in the Americas
4. Standards for effective ID and TD research: This point was discussed and there was a gener consensus on the fact that we currently have no empirical evidence on which to base "standards" for effective ID and TD research. We could though wite a short document on our own experience and lessons learned that could help others in their pursue of ID & TD research efforts.
5. Peer-reviewed publication: Not only 1 paper was outlined, but 4.
6. Website: This product has been active since March this year and is currently undergoing an update process.
7. Final report: The final report remains to be finalized.