

Distributed Graduate Seminar 2010: Sustainability Science

Summary by Christina Ingersoll

This is the summary of the survey results from the 2010 Graduate Seminar in Sustainability Science. It includes the results of commentary and recommendations about several aspects of the seminar including class format, workload, technology, and session by session feedback.

This document is not intended for distribution outside of the group of seminar participants.

Contents

Overview	4
Question 2: Would you participate again?	5
Question 5-8 Sessions:	6
Question 9: Readings	8
Question 12: Workload	8
Questions 14 and 16: Working with a Group	9
Question 17: Learning from other students.....	10
Questions 18-20: Technology	10
Questions 21: Timing.....	11
Questions 24 and 25: Class Structure	12
Question 26: Final thoughts	13
Appendix 1:.....	14
Sustainability Science Distributed Graduate Seminar Survey Text.....	14
Appendix 2:.....	17
Would you participate in another distributed seminar like this one?.....	17
Appendix 3:.....	21
What would you change?.....	21
Appendix 4:.....	24
What would you keep?.....	24
Appendix 5:.....	26
Explain why you particularly liked the sessions you selected	26
Appendix 6:.....	31

Not for distribution or quotation beyond seminar

Explain why you didn't like the sessions you selected	31
Appendix 7:.....	34
Suggestions for Improving the Readings	34
Appendix 8:.....	37
Workload	37
Appendix 9:.....	38
Experience working with/learning from students at other universities.....	38
Appendix 10:.....	42
Technology Recommendations.....	42
Appendix 11:.....	44
Timing Recommendations	44
Appendix 12:.....	46
Individual Group Meetings	46
Appendix 13:.....	47
Class Structure Recommendations.....	47
Appendix 14:.....	49
Final Thoughts	49
Appendix 15:.....	51
Feedback: Session by Session.....	51
1. Introduction.....	53
Likes.....	53
Dislikes	53
2. Sustainability Science and Sustainable Development (Speaker: Bill Clark)	53
Likes.....	53
Dislikes	53
3. Long-term trends and transitions in nature and society (Speaker: Robert Kates).....	54
Likes.....	54
Dislikes	55
4. The human-environment system: A conceptual framework (Speaker: B.L. Turner II)	55
Likes.....	55
Dislikes	55
5. The environmental services that flow from natural capital (Speaker: Steve Carpenter)	55
Likes.....	55

Not for distribution or quotation beyond seminar

Dislikes	56
6. Divergent vs. convergent development models (Speaker: Ivette Perfecto)	56
Likes.....	56
Dislikes	57
7. Human well-being, natural capital and sustainable development (Speaker: Stephen Polasky).....	57
Likes.....	57
Dislikes	58
8. Emergent properties of coupled human-environment systems (Speaker: B.L. Turner II).....	58
Likes.....	58
Dislikes	59
9. Institutions for managing human-environment systems (Speaker: Elinor Ostrom).....	59
Likes.....	59
Dislikes	61
10. Worked examples of concepts in human- environment systems (Speaker: Elizabeth King).....	61
Likes.....	61
Dislikes	61
11. Linking Knowledge with Action for Sustainability (Speaker: Bill Clark).....	62
Likes.....	62
Dislikes	63
12. Metrics for sustainable development (Speaker: Steve Polasky)	63
Likes.....	63
Dislikes	64
13. Grand challenges and core questions of sustainability science (Speaker: Bill Clark)	64
Likes.....	64
Dislikes	64

Not for distribution or quotation beyond seminar

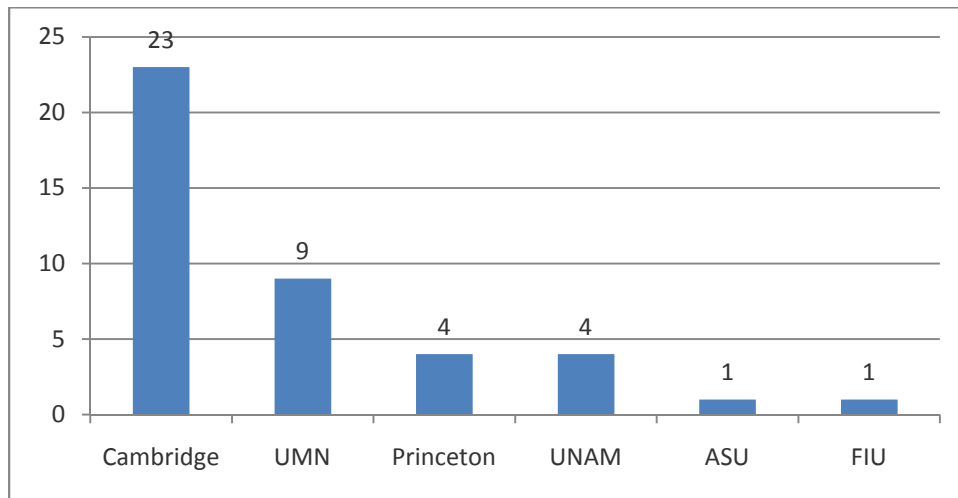
Overview

Out of approximately 110 participants in the DGS Sustainability Science Seminar, 42 people responded to the survey.

The demographics of the seminar students are as follows¹:

University/Group	Number of total students
Cambridge	33
FIU	17
UMN	17
CIECO	12
Cornell	8
Princeton	6
ASU	5

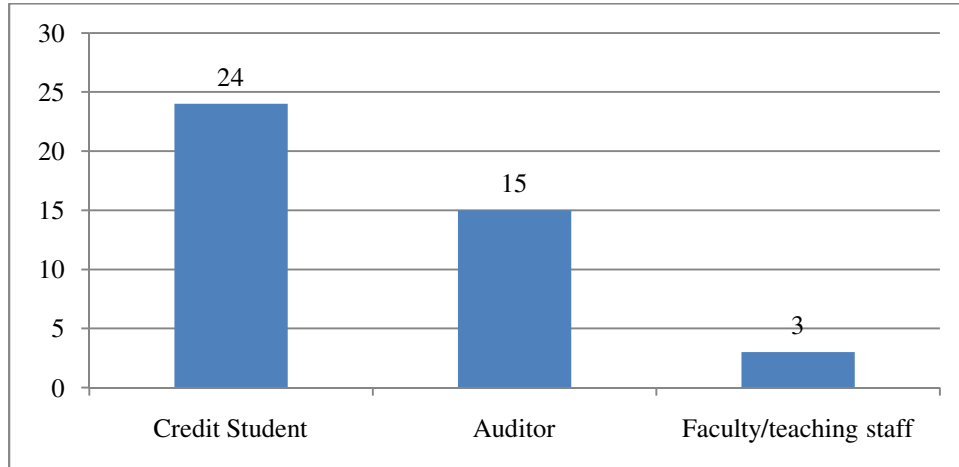
The respondents followed a similar trend, though we had only one response from FIU, one from ASU, and none from Cornell:



We had a mix of auditors, credit students, and of course, teaching staff/faculty. The survey respondents reflected that mix:

¹ This is according to the NCEAS website “participant” section. Some participants did not indicate a University affiliation.

Not for distribution or quotation beyond seminar



The survey consisted of 27 questions which were a mix of multiple choice and free response questions. The only required question was one asking which University/Program the participant was connected with. Though that question was a free response, the answers have been summarized into the following categories:

- ASU
- Cambridge
- Cornell²
- FIU (Florida International University)
- Princeton
- UNAM (CIECO)
- University of Minnesota

You can read all the questions, and the multiple answer choices in [Appendix 1](#). This summary goes through the highlights and trends. The open-ended responses are interesting and potentially useful; they are presented as appendixes.

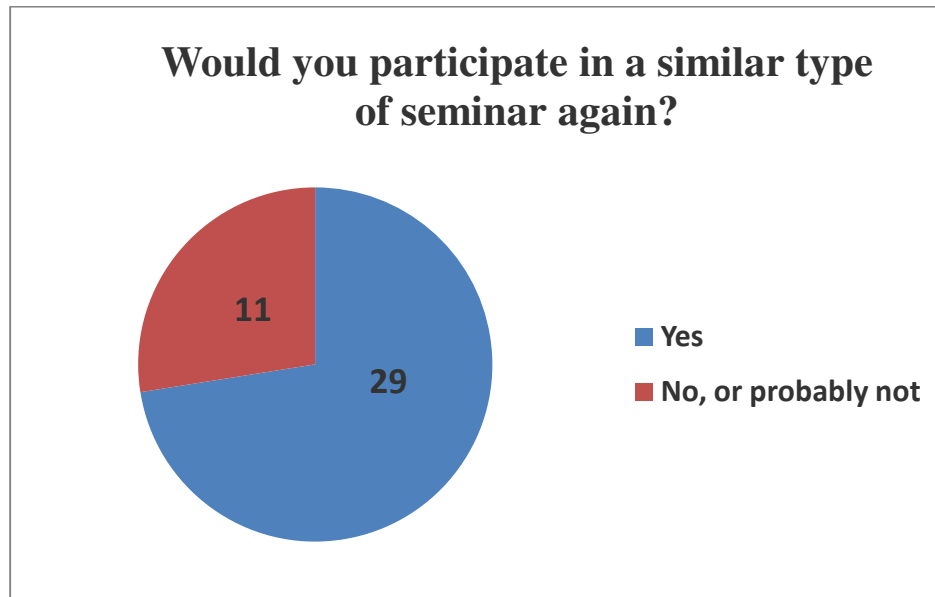
Question 2: Would you participate again?

The first substantive question was:

Would you participate in another distributed seminar more or less like this one, but with a different set of readings? If so, why -- [what was most valuable to you](#)? If not, [why not](#)?

The majority of respondents indicated that they would take the seminar again, and many offered thoughtful commentary on why. Some seemed not to understand the rhetorical nature of the question, and responded that they would not be able to participate in a future year for logistical reasons.

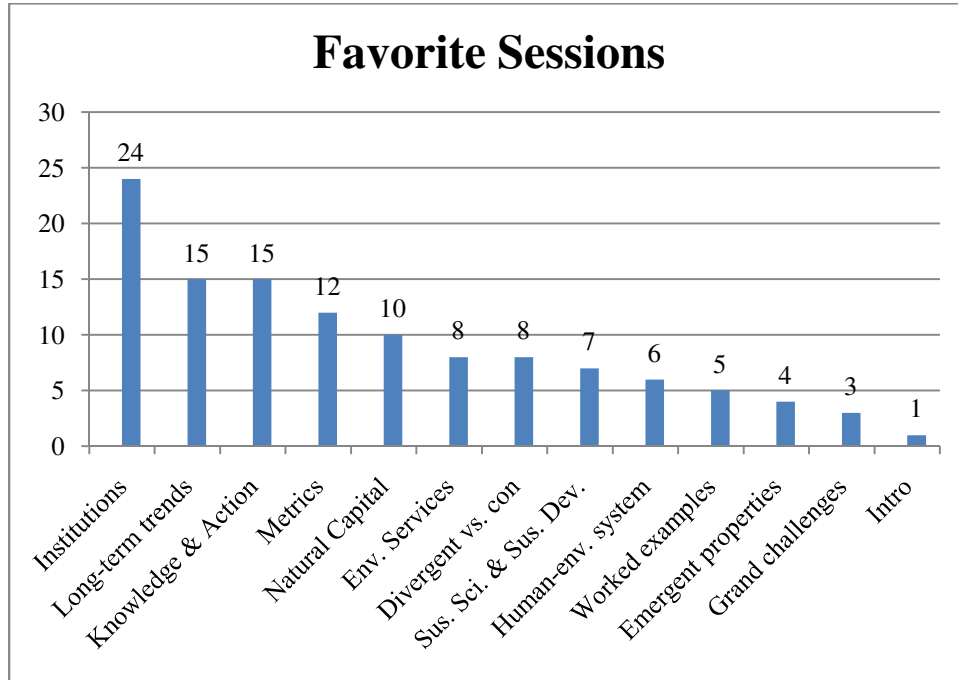
² Cornell was a group for the total participants, but there were no responses from Cornell, so they are not reflected in these results.



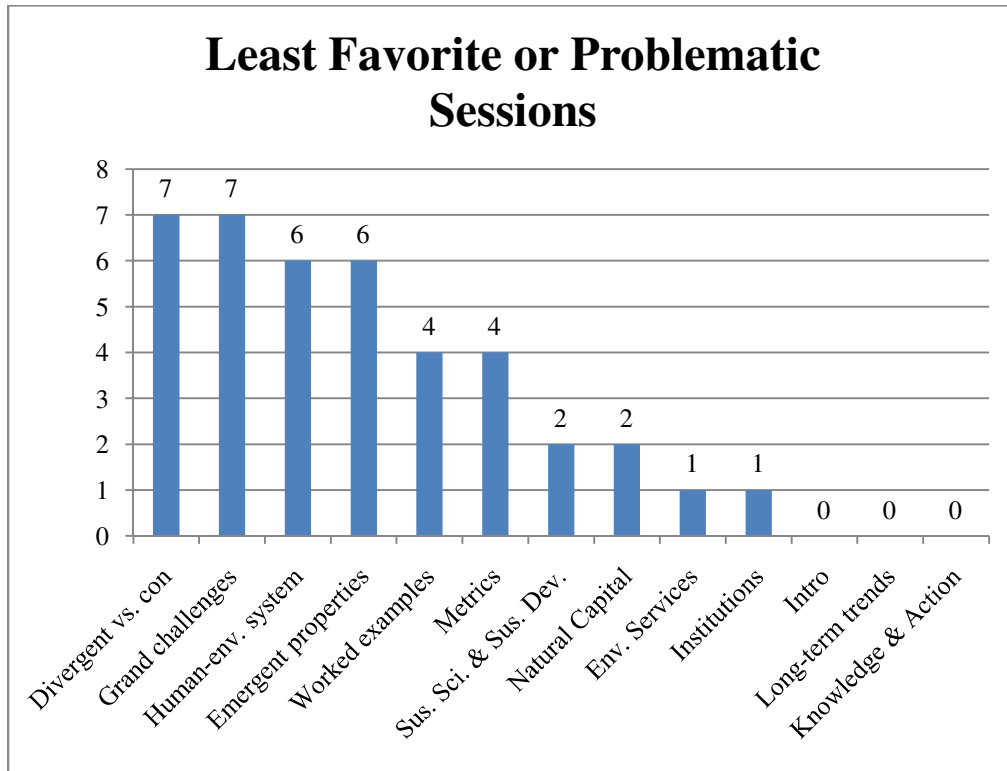
Question 5-8 Sessions:

Participants were asked about their favorite and least favorite sessions in the seminar. The titles of the sessions are:

1. Session 1 09.13.10 Introduction
2. Session 2 - 09.20.2010 Sustainability Science and Sustainable Development (Speaker: Bill Clark)
3. Session 3 - 09.27.2010 Long-term trends and transitions in nature and society (Speaker: Robert Kates)
4. Session 4 – 10.4.2010 The human-environment system: A conceptual framework (Speaker: B.L. Turner II)
5. Session 5 – 10.11.2010 The environmental services that flow from natural capital (Speaker: Steve Carpenter)
6. Session 6 – 10.18.2010 Divergent vs. convergent development models (Speaker: Ivette Perfecto)
7. Session 7– 10.25.2010 Human well-being, natural capital and sustainable development (Speaker: Stephen Polasky)
8. Session 8– 11.01.2010 Emergent properties of coupled human-environment systems (Speaker: B.L. Turner II)
9. Session 9– 11.08.2010 Institutions for managing human-environment systems (Speaker: Elinor Ostrom)
10. Session 10– 11.15.2010 Worked examples of concepts in human- environment systems (Speaker: Elizabeth King)
11. Session 11– 11.22.2010 Linking Knowledge with Action for Sustainability (Speaker: Bill Clark)
12. Session 12– 11.29.2010 Metrics for sustainable development (Speaker: Steve Polasky)
13. Session 13– 12.06.2010 Grand challenges and core questions of sustainability science (Speaker: Bill Clark)



Many participants cited sessions 9, 3, and 11 as favorites. Interestingly, all 13 sessions were mentioned as a favorite by at least one person.



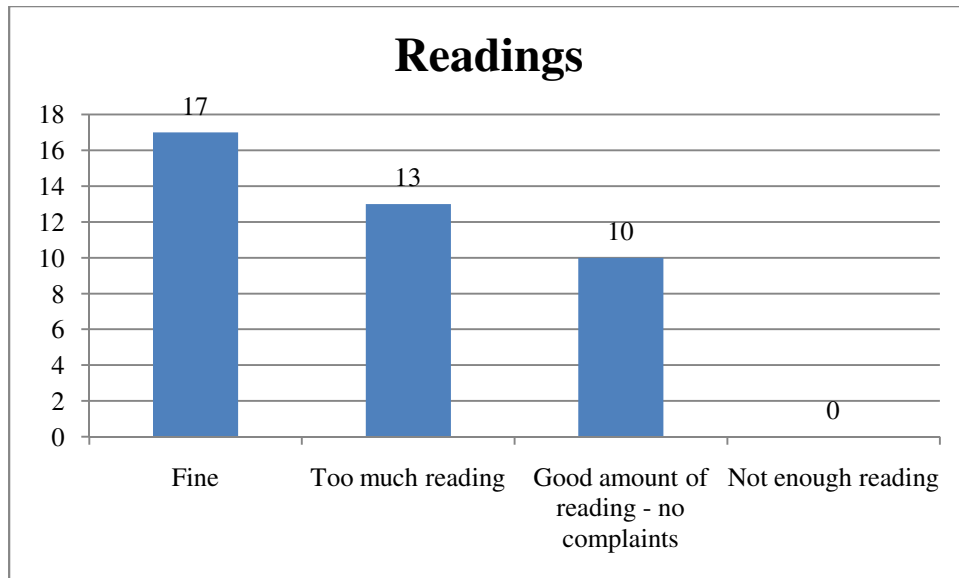
Fewer participants cited least favorite sessions, and three sessions received no mentions in this section. The [free response commentary](#) helps explain the participants' opinions about the sessions. Opinions on

Not for distribution or quotation beyond seminar

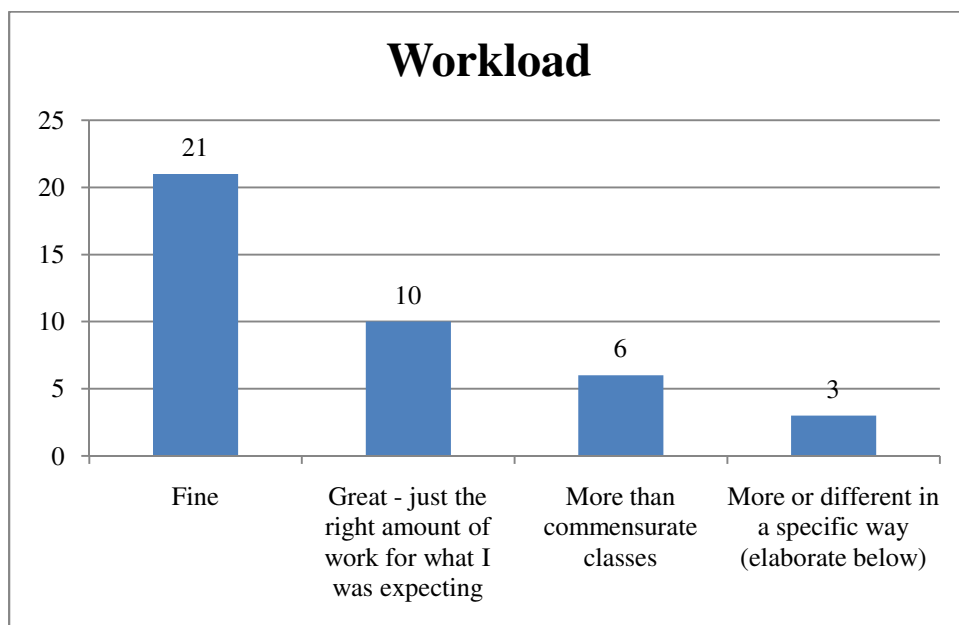
what made various sessions favorites or least favorites are quite varied. You can also read session by session feedback – both positive and critical in the final [appendix](#).

Question 9: Readings

Most respondents thought the level of reading was fine, though a significant number (33%) felt that too much reading was required. No one thought that there was not enough reading. The [open ended responses](#) to this question are quite interesting.



Question 12: Workload



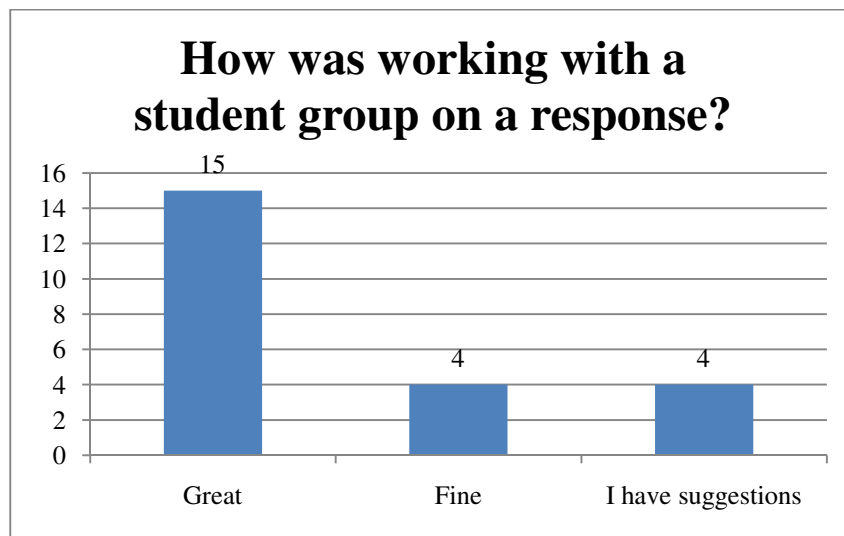
Not for distribution or quotation beyond seminar

Most participants felt that the workload was fine, although twice as many chose this option as “Great – just the right amount of work for what I was expecting”. The [open ended responses](#) help to elucidate participants’ opinions on the workload.

Interestingly, there were no discernible trends based on participant status (credit student or auditor): approximately equal numbers chose “fine”, “great”, “more than commensurate classes”, or “more in a specific way” within each of these categories. Two of the three faculty participant respondents chose “more than commensurate classes”. (The third chose “fine”.)

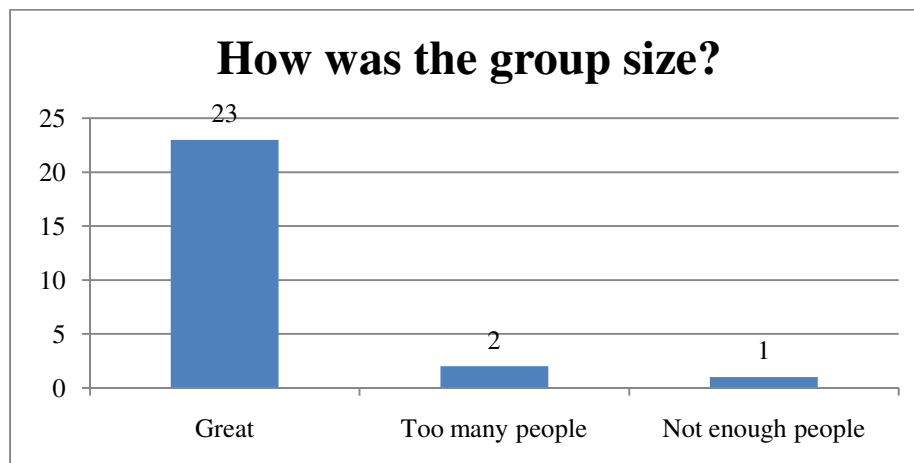
Questions 14 and 16: Working with a Group

Students were asked if they had participated in crafting a response/presentation for one of the sessions. The assumption was that only students taking the course for credit were part of a response group, and this does appear to be true of the survey respondents.



Of the 23 respondents who commented on working in a team, most thought it went well. The [free response questions](#) are somewhat specific and anecdotal, but interesting.

The majority of students felt that the group size was good:



Question 17: Learning from other students

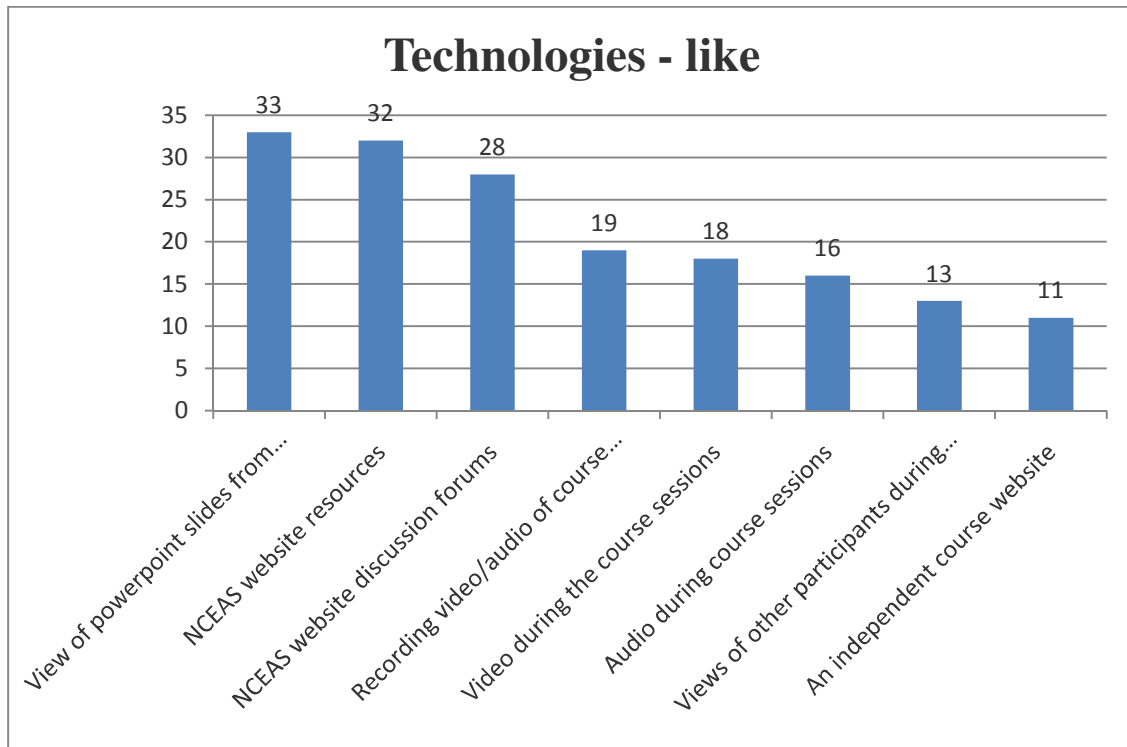
This question was directed at all student respondents: *For all students, how much do you feel you benefited from working with and hearing from students from other universities? What would you change about that process?*

Most (though not all) respondents were positive about their experience working with and/or hearing from students from other universities. This [free response section](#) is the one with the longest answers, and a very high rate of response for an optional, open ended question. (66% wrote comments.)

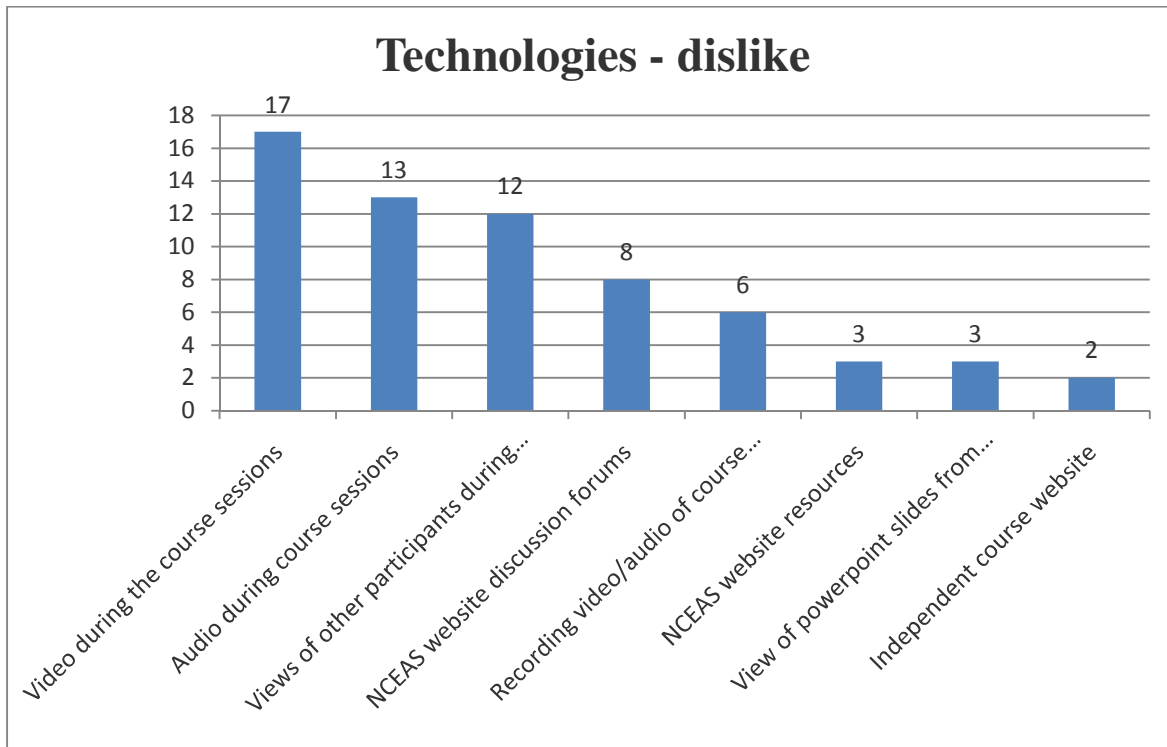
Questions 18-20: Technology

Participants were asked to pick out their favorite and least favorite or problematic aspects of technology we used for the seminar. The choices were the following:

- a. NCEAS website resources
- b. NCEAS website discussion forums
- c. An independent course website if you had one
- d. Video during the course sessions
- e. Recording video/audio of course sessions
- f. Audio during course sessions
- g. Views of other participants during course sessions
- h. View of PowerPoint slides from presenters during course sessions



All survey respondents picked at least one technology they liked. One analysis note: this graph should not be interpreted to imply that students did not appreciate an independent course website simply because it is the lowest ranked on this list. It is likely that not all locations had an independent website.

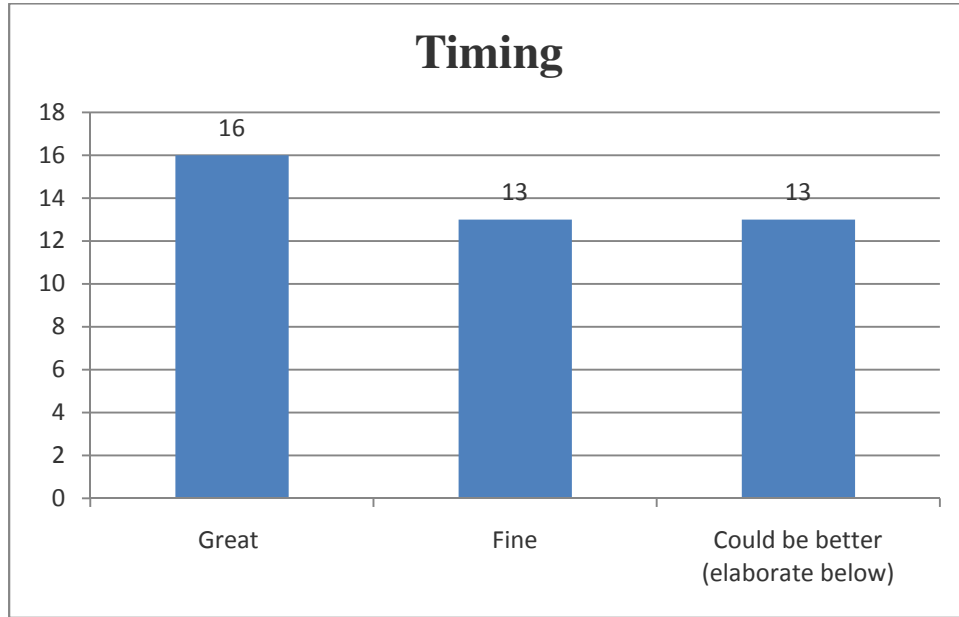


As with picking favorite and least favorite sessions, participants were more appreciative of technology than critical of it as indicated by the higher total number of votes for technology “likes” compared to “dislikes” (170:64).

The [free response section](#) for Question 20 which asked for suggestions was very interesting and did include some potentially useful suggestions, although they are not all compatible with each other! The most frequent comments were on audio and video quality.

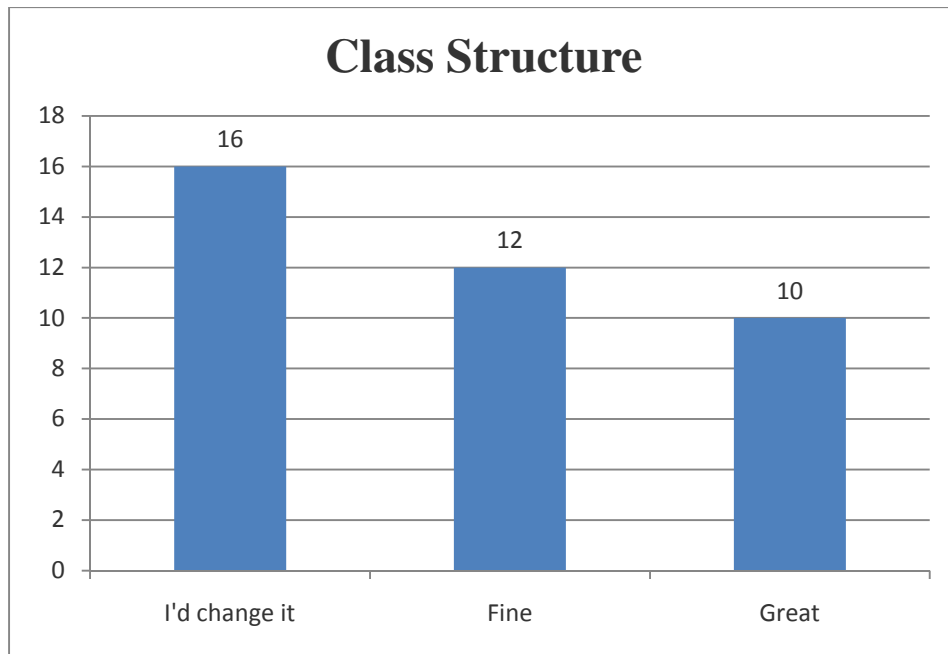
Questions 21: Timing

It makes sense that many participants found the timing “Great” or “Fine” as those potential students who found the timing truly impossible would not have been able to take part in the seminar at all. For this question, the [open ended responses](#) are probably the most valuable part.



It is also interesting to [read the reflections](#) on individual location meetings. 16 participants wrote comments to this question, and every one of those who mentioned meeting for a distinct local group discussion session found it helpful to have that individual group time.

Questions 24 and 25: Class Structure



Though the number of students who thought the structure was *either* “fine” or “great” was higher than those who chose “I’d change it”, the high number of students who chose “I’d change it” may indicate some displeasure with the format of the seminar.

Not for distribution or quotation beyond seminar

For this question too, the [open ended responses](#) are interesting and possibly useful, though once again not all suggestions are compatible with each other.

Question 26: Final thoughts

The majority (13 out of 16) of the comments in this section were congratulatory in nature. This [section](#) is encouraging to read and indicates an overall participant approval for this seminar continuing in the future. (At least among those who took the survey and offered comments in this section.)

Finally, here is a quote from this section to conclude the summary:

Despite many issues, it was a fascinating learning experience. Thanks for a great semester!

Appendix 1:

Sustainability Science Distributed Graduate Seminar Survey Text

This survey is intended to gather your reflections on the course itself, as opposed to the content of the book and the other materials we've read in the course. The questions are optional; fill in as many as you can. All results will be anonymous unless you decide to include your name at the end. Feedback from you will help the faculty organizers know how best to design future versions of this course.

This Distributed Graduate Seminar was an experiment in several dimensions. We explore several of those in specific questions that follow. First and most important, however, we want your overall assessment of the experiment.

1. What university and program are you a part of? *This will help us compare experiences across the different schools that took part in the Sustainability Science DGS this year.*
2. Would you participate in another distributed seminar more or less like this one, but with a different set of readings? If so, why -- what was most valuable to you? If not, why not?
3. If you were to change one thing about the experiment as it was conducted this year, what would that be and why?
4. If you were to keep one thing about the present design in future versions of the seminar, what would that be and why?
5. Sessions: In this course we will have had a total of 13 sessions - listed below. Do you have favorites among them? Check up to three and explain why below.
 - a. Session 1 09.13.10 Introduction
 - b. Session 2 - 09.20.2010 Sustainability Science and Sustainable Development (Speaker: Bill Clark)
 - c. Session 3 - 09.27.2010 Long-term trends and transitions in nature and society (Speaker: Robert Kates)
 - d. Session 4 – 10.4.2010 The human-environment system: A conceptual framework (Speaker: B.L. Turner II)
 - e. Session 5 – 10.11.2010 The environmental services that flow from natural capital (Speaker: Steve Carpenter)
 - f. Session 6 – 10.18.2010 Divergent vs. convergent development models (Speaker: Ivette Perfecto)
 - g. Session 7– 10.25.2010 Human well-being, natural capital and sustainable development (Speaker: Stephen Polasky)
 - h. Session 8– 11.01.2010 Emergent properties of coupled human-environment systems (Speaker: B.L. Turner II)
 - i. Session 9– 11.08.2010 Institutions for managing human-environment systems (Speaker: Elinor Ostrom)
 - j. Session 10– 11.15.2010 Worked examples of concepts in human- environment systems (Speaker: Elizabeth King)
 - k. Session 11– 11.22.2010 Linking Knowledge with Action for Sustainability (Speaker: Bill Clark)

Not for distribution or quotation beyond seminar

1. Session 12– 11.29.2010 Metrics for sustainable development (Speaker: Steve Polasky)
- m. Session 13– 12.06.2010 Grand challenges and core questions of sustainability science (Speaker: Bill Clark)
6. Explain why you enjoyed the sessions you checked.
7. Sessions: Of these 13 sessions, were there any that you did not enjoy or found problematic for some reason? Indicate which ones (up to three) and explain why below.
 - a. Session 1 09.13.10 Introduction
 - b. Session 2 - 09.20.2010 Sustainability Science and Sustainable Development (Speaker: Bill Clark)
 - c. Session 3 - 09.27.2010 Long-term trends and transitions in nature and society (Speaker: Robert Kates)
 - d. Session 4 – 10.4.2010 The human-environment system: A conceptual framework (Speaker: B.L. Turner II)
 - e. Session 5 – 10.11.2010 The environmental services that flow from natural capital (Speaker: Steve Carpenter)
 - f. Session 6 – 10.18.2010 Divergent vs. convergent development models (Speaker: Ivette Perfecto)
 - g. Session 7– 10.25.2010 Human well-being, natural capital and sustainable development (Speaker: Stephen Polasky)
 - h. Session 8– 11.01.2010 Emergent properties of coupled human-environment systems (Speaker: B.L. Turner II)
 - i. Session 9– 11.08.2010 Institutions for managing human-environment systems (Speaker: Elinor Ostrom)
 - j. Session 10– 11.15.2010 Worked examples of concepts in human- environment systems (Speaker: Elizabeth King)
 - k. Session 11– 11.22.2010 Linking Knowledge with Action for Sustainability (Speaker: Bill Clark)
 - l. Session 12– 11.29.2010 Metrics for sustainable development (Speaker: Steve Polasky)
 - m. Session 13– 12.06.2010 Grand challenges and core questions of sustainability science (Speaker: Bill Clark)
8. Explain why you did not enjoy or found problematic the sessions you checked.
9. Readings: how did the combination of session readings work for you? (Required chapter reading + articles from the Sustainability Reader + suggested readings from the moderator and other students)
 - a. Good amount of reading - no complaints
 - b. Fine
 - c. Too much reading
 - d. Not enough reading
10. Readings: Write any suggestions you have about how to improve the readings and their distribution.
11. How was the overall work load for this course? First - please indicate if you were taking the course for credit or as an auditor.
 - a. Credit student
 - b. Auditor

Not for distribution or quotation beyond seminar

- c. Faculty/teaching staff
12. How was the overall work load for this course?
 - a. Great - just the right amount of work for what I was expecting.
 - b. Fine
 - c. More than commensurate classes
 - d. More or different in a specific way (elaborate below)
13. Write any further comments you have about the work load.
14. If you took the class for credit and worked with a group to craft a response to a session, how was that experience?
 - a. Great, wouldn't change a thing
 - b. Fine
 - c. I have suggestions on how to improve the experience (elaborate below)
15. Write any suggestions you have for how to improve the experience of working with a group on a session presentation.
16. If you worked with a group to craft a response to a session, how was the group size?
 - a. Great, wouldn't change a thing
 - b. Too many people
 - c. Not enough people
17. For all students, how much do you feel you benefited from working with and hearing from students from other universities? What would you change about that process? *This question is especially valuable to the organizers for determining whether it is truly beneficial to have a multi-university seminar as opposed to several independent seminars.*
18. Technology: what aspects of the technology we used did you LIKE and find useful? (Check all that apply)
 - a. NCEAS website resources
 - b. NCEAS website discussion forums
 - c. An independent course website if you had one
 - d. Video during the course sessions
 - e. Recording video/audio of course sessions
 - f. Audio during course sessions
 - g. Views of other participants during course sessions
 - h. View of PowerPoint slides from presenters during course sessions
19. Technology: what aspects of the technology we used did you DISLIKE or find problematic? (Check all that apply)
 - a. NCEAS website resources
 - b. NCEAS website discussion forums
 - c. An independent course website if you had one
 - d. Video during the course sessions
 - e. Recording video/audio of course sessions
 - f. Audio during course sessions
 - g. Views of other participants during course sessions
 - h. View of PowerPoint slides from presenters during course sessions
20. Technology: What would you recommend to improve the use of technology to benefit future participants?

Not for distribution or quotation beyond seminar

21. Timing: What did you think of the course time? (Once per week for 2 hours, afternoon) If you were to change the timing, what would be better?
 - a. Great
 - b. Fine
 - c. Could be better (elaborate below)
22. Timing: If you were to change the meeting time, what would be better?
23. Timing: If your group met separately during the week, please indicate when you met, whether you found those meetings helpful, and why.
24. Class structure: We followed a fairly consistent structure in each of our class sessions: speaker presentation (about 30 minutes), moderator comments (about 15 minutes), student respondent group presentation (about 15 minutes), questions and answers to and from the speaker, moderator, and student group (about 30 minutes). This all-seminar structure was followed by about 30 minutes of individual group further discussion. What do you think of this structure?
 - a. Great
 - b. Fine
 - c. I'd change it (elaborate below)
25. Class structure: What changes would you recommend?
26. Anything else you'd like to add? *Feel free to write any other thoughts on your experience in the Fall 2010 Distributed Graduate Seminar on Sustainability Science.*
27. Your name (optional)

Appendix 2:

Would you participate in another distributed seminar like this one?

		Would you participate in another distributed seminar more or less like this one, but with a different set of readings? If so, why -- what was most valuable to you? If not, why not?
12	UMN	Yes--the cross-institution format was helpful enough to overcome the natural limitations of not being in the same room.
18	Cambridge	Yes. The technology proved frustrating at times, but overall it was interesting to get such a diverse range of presenters and reviewers (both faculty and student). I would have preferred a bit more time for our internal discussions within the Cambridge group, but also enjoyed the broader interactions.
21	Cambridge	Yes. The opportunity to hear many experts talk (remotely) about topical matters was an especially valuable aspect of the distributed seminar.
29	Cambridge	Yes. The most valuable thing was the opportunity to be exposed to such a rich and different set of perspectives on sustainability
36	UMN	Yes. Most valuable to me: diversity of the speakers' presentations in the same unified theme of sustainability and getting to know and share knowledge and views.
22	Cambridge	Yes. Lectures from cross-disciplinary scholars that expanded my viewpoints.
39	Cambridge	Yes. It was very valuable to learn the sustainability science material and another course would only reinforce this.

Not for distribution or quotation beyond seminar

4	Cambridge	<p>Yes. It was invaluable to be presented with a wide range of opinions on each piece we reviewed, and for that matter a wide range of readings which I doubt any single professor would have assigned.</p> <p>That said, I found the student-lead sessions from other universities sadly underwhelming. I think this may have as much to do with location as with skill and preparation. The session leaders were for the most part professional talkers, and knew well how to address an audience over distance. The students did not, and unless I was in the same room with them (as was the case with the Cambridge group), I rarely understood the words coming out of their mouths, much less they concepts that they were addressing.</p>
19	Cambridge	<p>Yes. It was a great experience taking part directly in actual research and debate among some leading theorists in this field - so I would like to participate in a seminar like this.</p>
40	Cambridge	<p>Yes. I would participate in another seminar similar to this one. The exposure to the different insights and institutional frameworks in the other departments and at the other universities was interesting. It is a rare opportunity to be able to take a class with so many professors from so many different disciplines, and watch them actually grapple with the material as well, rather than just teach it.</p>
20	Cambridge	<p>Yes. I was impressed that we could successfully have discussion with several universities across the country and in Mexico without relatively few technical problems. In the future, I will use this experience if the opportunity arises to run a seminar like this on my area of expertise. Another valuable experience was being able to communicate with such a diverse group and get a much broader perspective of what sustainability science encompasses.</p>
11	Cambridge	<p>Yes. I value the premise, the chance for discussion, the breadth of readings, and the framework that we got to work through. I especially liked that we got to actually discuss and debate the key aspects of sustainability rather than just assume someone else's.</p>
5	Cambridge	<p>Yes. Exchange of ideas over long geographical distances and potentially complementarity of competencies.</p>
13	Cambridge	<p>Yes. The most valuable component of the course was the opportunity to be involved in course with so many expert lecturers as well as the opportunity to engage with students from other Universities.</p>

Not for distribution or quotation beyond seminar

33	Princeton	<p>Yes. I would participate using similar readings, but think the reading selection could be improved.</p> <p>I think the using incomplete book chapter drafts as core readings, and focusing on providing critical commentary on those drafts, was more beneficial to the faculty involved than to the graduate students.</p> <p>That having been said, we all learned a great deal about sustainability science, and think the book will become a really valuable text for such a course. Interestingly, our group actually preferred the later sessions for which the book chapters were really undeveloped or absent, as opposed to the earlier sessions when the drafts were more complete but there was more pressure to focus discussions on ways to improve them.</p> <p>If I participated in another seminar, I would hope that the volume of readings would be better regulated. Between book chapters, selections from the "Reader", and supplementary articles posted by moderators AND student groups, the reading was way too much. Later sessions that clearly identified a set of priority readings of reasonable length worked better, because everyone in our group had in fact read the same thing by the time we got together to discuss.</p>
31	Princeton	Yes. diversity of perspectives, building knowledge base of literature
14	Cambridge	<p>Yes, though there are certainly aspects that I would change about it. In general, I like the idea of connecting with students and faculty at other universities--it has great potential for fostering new ideas and collaborations.</p> <p>Concerning this seminar specifically, the most valuable aspects were:</p> <ol style="list-style-type: none"> 1. Being introduced to the topics of sustainability science by experts in the different fields--hearing about the economics from an economist, about the institutions from an institutional analyst, etc.--was helpful (though, at times, the conversation was kept on such a superficial level that their expertise was not fully taken advantage of). 2. Beginning a relationship with faculty and students at other schools. I feel as though I can contact the faculty members at ASU, Princeton, UMinn, etc. if I have a project or idea that needs specific expertise in the field. Without the seminar, I would be extremely reluctant to do so.
10	Cambridge	Yes, in theory. Though I think the technology would need to be improved slightly so that you could really see the presenters at other institutions in a more defined way.
15	UMN	Yes, I would. The chance to hear such a varied group of speakers was wonderful. The videoconferencing and collaboration between all the institutions made this possible.
42	UMN	Yes, I would. I valued greatly the interaction with scholars at other institutions and the truly interdisciplinary thinking that was required to address issues of sustainability science.
37	Cambridge	Yes, I would love to because it manages to bring together multiple academic competencies and disciplinary insights at the same time and at the same virtual 'place' from a large cross-section of universities. But a rather more useful approach could be to discuss more case studies from different contexts and countries instead of keeping the discussion largely at the theoretical level.
16	UNAM	Yes, I would be very interested but will be unavailable next year
8	Cambridge	Yes, I thought that the cross-university style of the course brought in lots of different perspectives.
1	Princeton	Yes, I enjoyed working with other schools and getting different view points on each topic.

Not for distribution or quotation beyond seminar

2	UMN	Yes, because the different institutions had different perspectives that even an interdisciplinary seminar within one institution wouldn't have been able to offer.
27	UNAM	Yes, a kind of second part of seminar with some work on different real-world situations where the students must find the more sustainable solution following certain rules.
41	ASU	Yes since I enjoyed learning and interacting with students and faculty from other universities.
6	UMN	Yes I would. We have reached a point in our technology where these types of meetings can work well enough and the technical problems we do have are far outweighed by the opportunities to interact with other students from across the country/world.
24	Cambridge	<p>Yes - I enjoyed meeting other students researching in the same area, and asking similar questions from various disciplines. The distributed aspect of the seminar did not allow for the same interactions with those in other schools; but interacting with the Cambridge students was a great, cross-pollinating experience.</p> <p>Also, the variation in speakers was great each week. I learned something different from each presenter, who all had various strengths given their past research.</p>
38	Cambridge	There were a lot of "languages" being spoken in the seminar and the format made it too difficult to ask people to explain themselves. With so many people and the difficulty of talking across institutions I feel that the course was really only able to cater to those who were more policy-oriented to begin with.
9	UMN	Probably would not, simply given that I am done with coursework for my program and I just took this class for fun. However, I enjoyed the course and would definitely recommend a similar course to others in the future. The most valuable part of the class was our MN discussions. Unlike a lot of other discussion-based courses, I feel like we really dug into the topics and it broadened my understanding.
7	Cambridge	<p>Probably not. I say this because while I enjoyed this seminar it was mainly because it was in my primary field and I felt like I was reading about and getting to hear a variety of perspectives on the "cutting edge" confusion of a field which is of particular interest to me. Thus, some of the pain involved with the as yet imperfect technology was mitigated by the gains I got based on the subject and a desire to hear multiple perspectives and see what others I doing/thinking in sustainability science.</p> <p>I don't think I would subject myself to the pain of the poor technology for a topic i was any less interested in.</p>
28	Cambridge	Probably not since I will focus on different aspects of public policy and public administration during the remaining terms.
17	UMN	Perhaps, but would consider it relatively stringently first and would have to be confident that the material would be valuable. I found that since communication was so tricky, with some of the material we ended up talking in circles and not getting much done. I think it could work better with a more specific topic that is easier to dive into directly (see below).
35	Cambridge	Not one that required so much interaction across universities. too hard to communicate with the current technology.
26	Princeton	No. The set of readings suggested by the individual weekly presenters were helpful/thoughtful but the textbook was just frustrating! While reading most chapters I ended up evaluating figures and thinking of ways to improve the text- not actually absorbing any information. I recommend that if a textbook is in draft form, it be reduced to bullets or figures are not included at that stage.

Not for distribution or quotation beyond seminar

23	UMN	No, I personally would not given where I am at in my graduate career. But, I would recommend the seminar to others. I would like less emphasis on the book (unless it is greatly improved) and more emphasis on readings from the reader and other readings suggested by the presenters.
25	UNAM	No
3	FIU	Maybe - I would like it more structured, but it was understandable due to this being an experimental course.
30	UNAM	I would take into account at least some readings about the history of the principal terms, concepts, global projects and institutions to get some basis about the theme.
32	Cambridge	
34	Cambridge	

Appendix 3:

What would you change?

		If you were to change one thing about the experiment as it was conducted this year, what would that be and why?
1	Princeton	I would have it be more free flow. I thought people got too upset about "going over" on time that it took away from what the presenters were saying.
2	UMN	It would have been nice (but time-consuming) to have one joint session with speakers as we did, one joint session just for discussion, and one intra-institution session for further discussion.
3	FIU	More structured! Would like a bit more gearing to undergraduates, but I found this extremely enlightening and fun.
4	Cambridge	I would like to see at least twice as much time devoted to interaction within the Cambridge group. I don't think the answer is to split the seminar into two meetings per week, since immediate feedback on the session leader's presentation was very valuable. For the most part, I would try to "gain" an extra half hour of closed discussion (within only the Cambridge group) by striking the student presentations entirely. These could perhaps instead be posted on the website as a memo for all participants to see - a compilation of the readings and some comments based on further research, a la ESPP-10 two years ago.
5	Cambridge	Have a more intensive preparation within the local group before going online.
6	UMN	I would not center the course around a particular book. I thought the discussions often reverted back to fundamental debate on the goals/definitions of sustainability science which could have been avoided if the class had been allowed to come to some kind of shared consensus at the beginning rather than being bound to what was in the book.
7	Cambridge	I would have 1 moderator the entire time and not have them present. Thus only the author (or his delegate in the case of Partha) and the student group. This would leave more time for Q&A. The role of a single moderator throughout would be only to monitor flow of questions and keep track of time. Someone good at this who understands their role and does not like to give longwinded introductions (Bill Clark would be a good candidate to be the moderator all term but i know it's a lot of work) would be best.
8	Cambridge	More time for in-person discussion with the smaller local group -- Perhaps combining the moderator and student discussants into one presentation, or perhaps allowing for within-group discussion before opening the floor to questions across all universities. (So each university group would discuss on their own and then perhaps meet back up with their three most important questions/point ready for larger group discussion.)
9	UMN	The video part of the screen was very small - it would have been nice to see the speaker a bit more. It also would have been nice to have the book chapters a bit further along - but that will

Not for distribution or quotation beyond seminar

		happen next year!
10	Cambridge	Video quality and student presentations/discussion.
11	Cambridge	<p>I'd probably change how the student presentations are done - possibly to the point of not doing them. I'm torn on this point. On the one hand, I enjoyed hearing from various students and thought that they brought valuable insight to the discussions. On the other hand, I really would have loved to hear more from the book authors and other (professional) speakers.</p> <p>In addition, the technology was a mixed bag. I love the concept of a distance but collaborative course. In practice, the technology could not always keep up with us. This was especially true of the student presentations. Several times I simply couldn't hear or understand the student speakers - as in I couldn't hear what words they were trying to say, not to mention grasping for a point occasionally! This was rough. I'm not sure how much any one person can do about - it's probably layered effects (or an emergent property if you will) of multiple people's compromised internet connections, phone lines, cell phone interference etc.</p>
12	UMN	<p>I would spend the first two-three weeks getting the group on the same page as to the normative, use-inspired definition of sustainability that the course would adopt. The limitations and alternatives to this stance would also need to be discussed.</p> <p>Then, the rest of the course could be seminars that take a positivist, sustainability science approach to contextualized problems. A review of methods and techniques could be integrated with a discussion of trying to solve actual problems.</p>
13	Cambridge	I would have encouraged and incorporated more cross university collaboration into the design. Once we got going it seemed there was limited opportunity to really make connections across universities. I think a planned approach to collaboration is necessary to make it effective.
14	Cambridge	<p>I would increase the amount of collaboration between the students at the various schools. One thing that I was looking forward to (and was disappointed about not experiencing) was meaningfully engaging with students outside of Harvard. While this started to happen in the Cambridge group (connecting students from MIT and Harvard), I would have liked to have required collaborations with students at other institutions. This could certainly be achieved in a number of ways, including:</p> <ol style="list-style-type: none"> 1. Limiting the seminar to schools within a geographic area, and then scheduling actual "face to face" seminar meetings twice or three times per semester. For example, if the seminar consisted of Harvard, MIT, Brown, Columbia and Yale, then we could have large in-person meetings at the beginning, middle and end of the semester in Boston, New York, and Providence. Placing students into cross-university "teams" (which would then turn into either the presentation groups or the final paper groups) at the first meeting would also encourage such collaboration. 2. Having the presentations be given NOT by the students at a single university, but by a group of students from different universities. This could be a logistical nightmare, however.
15	UMN	I would remove the off the cuff Q&A at the end of the sessions. Maybe try to include a Q&A in a different format, but it seemed to me in the form used there was little productive discourse produced from that section.
16	UNAM	I would emphasize less reading. Instead I would choose one or a few study sites per institution and try to apply what has been learned each class to the study site. This could be done by providing all the relevant information for a previously quite well know site, and by developing analytical tools such as tables or flow charts to be developed for each study site following each topic. I feel there needs much more digestion of the materials.
17	UMN	I would liked to have had us read and discuss peer-reviewed articles instead of draft book chapters - something like a distributed reading group.
18	Cambridge	Add some more time for discussion within our local groups. The technology and uncomfotableness some felt in speaking to such a large group limited interaction among the entire group at some points; it was great to have, but small group interactions provided a necessary degree of richness on top of that.

Not for distribution or quotation beyond seminar

19	Cambridge	I would try to make more clear the meaning of some basic notions and concepts at the beginning and to elaborate them in the course of the seminar. So it might be possible go deeper into the controversé between different concepts. And I would give the participants more time. There was stuff for at least three times as much as we had.
20	Cambridge	Definitively establishing a set of rules for improving the communication between social and natural scientists. Due to the variety of jargon from our specific fields I felt many times in the discussion I couldn't grasp the details of the views of all seminar participants. I would have taken more advantage of this seminar if we all had make an effort to speak to a broad audience.
21	Cambridge	I felt that the level of participation after the expert "talk" was valuable, but that this would be enhanced by the more interesting discussions that happened face-to-face after the distributed seminar. I felt less time should be allocated to students at each institution talking, and more time should be allocated to off-line discussions. That said, I appreciate that the Cambridge group had sufficient critical mass to have lively off-line discussions - maybe this suggestion would have a negative effect on other smaller institutions.
22	Cambridge	Make all slides available before each session.
23	UMN	Less centered on the book. I think it is too rough/incomplete at this point to be the central focus of the seminar.
24	Cambridge	Improve the readings. While the manuscript is in draft form, it is difficult to understand the full intellectual thrust each week. This weakened both the responses to the readings and the discussion. In cases where the readings were finished pieces (e.g. the PNAS piece or report on linking knowledge with action), I found the overall discussion more pointed and fruitful. This would likely improve naturally in future years as the manuscript develops.
25	UNAM	Have more time to absorb better all the readings and discussions
26	Princeton	No moderator presentation so that there is a longer discussion time. I really enjoyed a 20-25 minutes brief lecture then the student presentations- the moderators were the least needed component.
27	UNAM	I would invite more universities from different countries to have their perspective about sustainability science.
28	Cambridge	
29	Cambridge	This is relevant to the Cambridge group only (or to other groups that set up a separate on-line discussion tool): I found a bit difficult to follow discussions on two different platforms. I understand the importance of having a separate internal exchange of opinions, but I'd rather do that through periodic meetings than through one more on-line forum.
30	UNAM	Better communication between all the parts.
31	Princeton	Have the moderator merely moderate and not give an additional lecture. (more time for discussion and questions)
32	Cambridge	In addition to the distributed seminar sessions, I would have liked to meet just as a class.
33	Princeton	I would simplify the responsibilities of the discussant/student groups.
34	Cambridge	ITC defaults were annoying - the possibility to view the presenters in a larger video would help concentration
35	Cambridge	remove the moderator session. spend more time in discussion.
36	UMN	Try to make everybody stick to allotted time while presenting/speaking.
37	Cambridge	I think the presentation of the topic should be for one hour and much more detailed. The student group's discussions should remain as such. One could have done better with the video and audio quality.
38	Cambridge	The best discussions were those held within our own group because it was possible to ask people to explain themselves further when they were not clear or used specific and unfamiliar language.
39	Cambridge	

Not for distribution or quotation beyond seminar

40	Cambridge	The format, with one lecture, then a professional response, and then a student response, became repetitive and lost focus. Furthermore, despite the similar format, the quality varied widely and made it difficult to relate clearly to the book.
41	ASU	I would have liked to increased the time for discussion.
42	UMN	There are two issues that would be important to address. One is having a backup for the video productions and perhaps having a TA associated with the course take on responsibility for the video technology. A second would be to bring in additional topics that represent perspectives not covered and to present case studies that bring down to earth the topics that were covered.

Appendix 4:

What would you keep?

		If you were to keep one thing about the present design in future versions of the seminar, what would that be and why?
1	Princeton	I like the cameras. It was good to place a face to a voice during the presentations.
2	UMN	I liked the longer main speaker presentations followed by the moderator's thoughts that were integrated with the students' presentation.
3	FIU	Interaction via seminar with multiple colleges. Was very interesting to see how other schools went about everything, and their perspectives!
4	Cambridge	The presentations by the session leaders were for the most part excellent, particularly when there was disagreement between the authors on particular subjects. I found the banter between authors during the session HELPFUL rather than distracting, since it made very clear where current discussions exist in each field, and gives a throughout and applied review of each side of the discussion. I think embracing these discussions - perhaps even planning debates between authors, would greatly improve the seminar.
5	Cambridge	Online contributions before the sessions
6	UMN	Allowing for/encouraging cross-institutional student collaborations on presentations and the papers was a great idea.
7	Cambridge	I liked the website a lot for discussions. I only wish all universities had participated in online conversations and follow-up to lecture.
8	Cambridge	I like the structure of the readings (one topic in the draft book + related readings in the sustainability science reader + recommended readings from the discussants). Also having the lectures distributed across universities seemed like a great way to give us all exposure to people we may not otherwise have heard from. [The discussion portion of the multi-university part was a little harder to manage though.]
9	UMN	Distributed + local discussion. It just makes sense logistically.
10	Cambridge	I like the idea that an interdisciplinary course can include so many different speakers throughout the semester, without having to fly them all in.
11	Cambridge	I liked having a book as a focal point for framing the class and discussions around. I'm not sure how that would be replicated in a future year - possibly with the published version of the actual text? I do think the joint discussions with other students from different schools had potential, but to be honest, I also think that there were some trade-offs made and that a class with a mix of students but in a single location on the same subject might have some benefits in terms of interaction and participation that the larger group experiment was lacking.
12	UMN	Question-answer period with competent moderator (this varied).

Not for distribution or quotation beyond seminar

13	Cambridge	The discussion group is a great sounding board for ideas and research. That is an integral component of the seminar.
14	Cambridge	Having a significant amount of time set aside for each university to discuss the topics after the electronic seminar meeting finished.
15	UMN	I liked the format of a speaker, discussant and student commentary. Integrating these three parts especially led to effective sessions.
16	UNAM	I really liked the web page, the lectures and the multi-institutional sessions. All this coordination gave a sense of connection, broad perspective, search for similar answers
17	UMN	If it's to be run in a distributed format, I liked having the moderator, presenter and student reflections come from three different institutions - it felt equitable and inclusive.
18	Cambridge	The website. I feel that the discussion threads both before and after each class provided a great deal of value.
19	Cambridge	In my mind it should be possible to continue the theoretical debate all over the continent (or even with some participants from Europe). One condition might be the use of technical instruments which are up to date.
20	Cambridge	I would keep the structure of seminar. Presentations, online discussion and internal discussion.
21	Cambridge	Experts presenting a chapter. The opportunity to hear from experts that may not be locally available.
22	Cambridge	Broad cover of topics from natural to social science.
23	UMN	Cross-university collaboration. I would like more of a structure to encourage and facilitate this.
24	Cambridge	Discussion and group work. The opportunity to work with other students preparing for the presentation was invaluable. Everyone came prepared, worked hard and contributed to a high-level discussion. The discussion period after the weekly presentations was also great, although it would be great to have that in a round table format for closer to an hour, more like a traditional seminar.
25	UNAM	The group dynamics
26	Princeton	Formulation of a research question for the final class. This gave the class a real world perspective on what specifically are we looking to accomplish and how are we going to go about doing this. This research question "final project" forced the students to think of how he/she can personally contribute to sustainability science through his/her studies.
27	UNAM	Seminar structure and participants from different disciplines, as their multiple visions allow all of us to share experiences and points of view reflecting the multi dimensional properties of sustainability.
28	Cambridge	The different presenters - they were amazing!
29	Cambridge	I enjoyed the timing and the structure: speaker-moderator-students-Q&A-internal discussion. I usually have troubles in keep my focus for two straight hours by staying sit in the same place (and especially if I have to listen to somebody not physically there). This seminar was an exception and I believe that the "lively" structure played a key role in keeping high the level of attention.
30	UNAM	The interaction and active participation between all the parts.
31	Princeton	
32	Cambridge	I personally found the moderator introductions helpful in summarizing a great deal of information in short period and setting the context for the group presentations.
33	Princeton	Maintaining space for the student groups to develop their responses and extend the topics in novel directions. I found the discussant/student presentations often more enlightening than the main lectures, which often kept focused on the chapter content so didn't bring in as much new information.
34	Cambridge	The co-learning setup with students/researchers presentations was interesting and, I believe, valuable for effective feedback.
35	Cambridge	student discussion.

Not for distribution or quotation beyond seminar

36	UMN	Student presentations: great way to learn, share, and present work in this new area.
37	Cambridge	The web-based posting and discussion is very useful and allows free flow of ideas and hypotheses.
38	Cambridge	
39	Cambridge	The student presentations. It keeps everyone in our toes.
40	Cambridge	As everyone got more comfortable with the online interactions, the use of the simultaneous chat became an important part of the communications.
41	ASU	Sending out the discussion questions and topics prior to the session.
42	UMN	I really liked the format of having one presenter, a faculty respondent, and then a cohesive student group presentation. There were some glitches, but overall, this worked very well. This seemed to maximize participation and engage almost everyone.

Appendix 5:

Explain why you particularly liked the sessions you selected

		Sessions: In this course we will have had a total of 13 sessions - listed below. Do you have favorites among them? Check up to three and explain why below.					
1	Princeton						
2	UMN	Natural capital is an integral part of environmental sustainability, so it was a great presentation on a necessary topic. I learned a lot from the well-being discussion, including the idea of shadow prices that led to a discussion on policy implementation. Elinor Ostrom was a great speaker and I enjoyed her thoughtful responses to questions.	5	7	9		
3	FIU						
4	Cambridge	In each of these sessions, I left feeling like I actually knew more than when I walked into the session. They each had definite beginnings, posed particular questions, explained how one might answer these questions, and then ATTEMPTED TO ANSWER THEM. Even when the result was that there is no satisfactory answer, or at least none for the moment, it made the session meaningful.	2	3	4	9	13
5	Cambridge	The flow of the overall design of the book become most visible in these sessions.	1	2	7	9	11
6	UMN	I thought these sessions were the ones that addressed issues the most informatively and pragmatically. In other words, I thought these were the most content-heavy (as opposed to being unnecessarily philosophical).	3	7	12		

Not for distribution or quotation beyond seminar

7	Cambridge	<p>It was fantastic to have Lin present and she did a great job of distilling her work in a presentation that was really fun to watch. I also thought she did a very nice job of engaging with the student commentators and taking everyone's questions seriously.</p> <p>Lizzy King's subject material was a lot of fun.</p> <p>I think that in the Cambridge groups discussion post session 12 on metrics, we finally came to some sort of consensus on the usefulness of the Dasgupta model and where it breaks down. Bill's comments about policy makers hesitance to aggregate metrics and the idea that well being is a useful conceptual tool but not yet for making any kind of prediction was important. I was excited about the class after this session but mostly because I felt I had come to clarity and peace with the ideas presented on well-being over the course of the semester.</p>	9	10	12			
8	Cambridge	<p>Sessions 5 & 10 gave some specific examples of research projects in Sustainability Science. I enjoyed this because as an early-stage PhD student, it helped me think through the kinds of research I might conduct myself. Session 10 was only examples though, so it maybe should have been combined with Session 4?</p> <p>Another idea is that the moderator/discussants could perhaps focus on applying the concepts from the speaker to specific examples or case studies, and through this make their main points.</p> <p>Session 7 was good because it helped me get a handle on what our 'objective function' as sustainability scientists might actually look like. I was a bit put off by the idea of actually trying to calculate shadow prices from existing data, however, as it assumes that our current market spending accurately reflects what values we will and should place on different aspects of human well-being. [Note that some things are 'cheap' not because they contribute less to human well-being or are valued less by humans, but simply because they cost less to produce or are not (yet) scarce relative to other dimensions that are traded on the market.]</p> <p>I greatly enjoyed Session 9 partly because this is related to my field of research but also because it raised some questions about the logic employed in Session 7. It also pointed to situations where both environmental protection and human well-being can be improved and helped us begin thinking about the factors that allow that to happen.</p> <p>I liked Session 11 because I think the ideas presented there make both for better research and for greater likelihood of implementation.</p>	5	7	9	10	11	
9	UMN	Very substantive presentations.	5	7	9			
10	Cambridge	They seemed the most grounded in practice rather than dealing with academic frameworks, and that's the material that's most interesting/useful to me.	3	11	12			

Not for distribution or quotation beyond seminar

11	Cambridge	<p>1. I found Bob Kate's chapter a delight to read - straightforward and interesting. It was also a pleasure to meet the man in person and get to hear a little more of his experience and thoughts.</p> <p>2. Though it wasn't a traditional class (no book chapter) I quite enjoyed the divergent vs. convergent readings, Ivette's presentation until the technology failed, and especially our group discussion afterward. That area within sustainability science is of great interest to me.</p> <p>3. I really enjoyed Elinor Ostrom's chapter, and her presentation. I also enjoyed Partha Dasgupta's preface (or appendix) although I actually found them somewhat incongruous to read back to back. Perhaps that is just my own experience on the day I read them, but I have heard some similar sentiments from other classmates. I also heard that Lin Ostrom has previously given a very similar talk in a different context, but it was new to me and I thoroughly enjoyed it.</p> <p>These are NOT the only three I enjoyed, but these stick out to me for one reason or another.</p>	3	6	9			
12	UMN		3	11	12			
13	Cambridge	The three sessions I checked above were	3	9	11			
14	Cambridge	These sessions were my personal favorites because the subject matter was most aligned to my particular academic interests.	9	11				
15	UMN							
16	UNAM	The expositions in these sessions was extremely clear, appealing, and made sense to the kind of questions I would like to answer.	2	5	6	9	10	11
17	UMN	I thought Steve Carpenter, Lizzie King and Elinor Ostrom had very clear messages that were interesting and not too theoretical.	5	9	10			
18	Cambridge	<p>Session 3: It is valuable to nest this broader semester-long discussion in the longer-term trends, and this lecture did this well.</p> <p>Session 9: I think there was too little consideration overall of how decisions are actually made and governance occurs on the path to more sustainable societies. This lecture was obviously an exception!</p> <p>Session 11: Again, an important contribution in terms of governance for sustainability. There were some really important themes here, including the focus on what makes knowledge credible and useful to decision-makers. I do, however, think that there could have been more about the political challenges and nuances along the path from knowledge to action.</p>	3	9	11			
19	Cambridge							
20	Cambridge	Robert Kates is a great writer and speaker! Bill Clark did a very concise and clear talk It was interesting to hear everybody's point of view in Session 13	3	11	13			
21	Cambridge		3					

Not for distribution or quotation beyond seminar

22	Cambridge	<p>Session 2 nicely summarized the field of sustainability science. Session 5 talks about natural capital and human impacts using concepts and methods that is understandable to the general public.</p> <p>Session 9 identifies how can we manage the H-E systems to improve sustainability, although context dependent.</p>	2	5	9			
23	UMN	<p>I liked the presentations by Elinor Ostrom and by Steve Carpenter. Additionally, the Natural Capital session (S. Carpenter) was one of the two that I was a student respondent, so I had more invested in it. Steve Polasky's work (and his talk) is very well aligned with my own, plus I think he is a fantastic presenter.</p>	5	7	9			
24	Cambridge	<p>Both Bob Kates and Elinor Ostrom were fantastic presenters with through, specific presentations. Similarly, I enjoyed Ivette Perfecto's work and presentation, and was quite disappointed with our audio problems cutting her explanation short!</p> <p>I also enjoyed Elizabeth King presenting her research (session 10) and Billie Turner's long example of CHES using the mayan case (Session 8).</p>	3	6	9			
25	UNAM	<p>Are the basic foundations for a real vision of human activities to the environment</p>	4	6	8			
26	Princeton	<p>Being from an engineering background, Elinor Ostrom's social science viewpoint really opened my eyes to how important human motivation, trust, and relationships are when dealing with CHESs.</p>	9	11	13			
27	UNAM	<p>I really enjoyed the vast experience of the speakers in their fields and the way they presented the sessions. I think that having a seminar with a variety of experienced speakers from different institutions is crucial for the success of the seminar.</p>	6	9	12			
28	Cambridge	<p>Session 9: Professor Ostrom is just an amazing person and I enjoyed her presentation personally and academically.</p> <p>Session 7 & 9: Professor Polasky was the first person to explain any economic topic in a way that I had no trouble understanding.</p>	7	9	12			
29	Cambridge	<p>Session 2 and 3 did a great job in setting the scene for the whole seminar, by providing insights on the foundations of SS (section 2) and on key sustainability issue (section 3). They wet my appetite, so to say.</p> <p>Session 7 provided perhaps the most intellectually engaging aspect of the seminar, together with a lot of food for thought related to the operationalisation of sustainability.</p>	2	3	7			
30	UNAM	<p>Session 4: It was a useful and central part of what has to be Sustainability.</p> <p>Session 6: Showed different and important perspectives about sustainability in action, that are polemic and not well understood.</p> <p>Session 8: Gave us knowledge about elements difficult to achieve in sustainability science given the complexity of the CHES.</p>	4	6	8			
31	Princeton		9	10	11			
32	Cambridge							

Not for distribution or quotation beyond seminar

33	Princeton	<p>Session 3: Ideas were expansive and free. Between Bob Kates' focus on the potential for a "great transition" and the only developed discussion of consumptive behavior and perceptions of well-being, it hit on some of the biggest, in terms of scope and importance, intellectual challenges in sustainability science.</p> <p>Session 12: The fact that inclusive wealth is unoperationalizable seemed like an elephant in the room for a long time. It was good to go back to recognize and discuss exactly why it's nearly impossible to measure. The student presentation was really fascinating.</p>	3	12				
34	Cambridge	<p>Session 9 - it gave a clear understanding of the relevant institutional factors and questions for Sustainability Science, a dimension that is not always sufficiently considered in the S&T arena.</p> <p>Session 11 - very interesting for the chosen conceptual framework used for tackling this very strategic topic</p> <p>Session 12 - I enjoyed the broad discussion of different ways to build and justify metrics systems - it gave me a sense of how much we are still far from the goal.</p>	9	11	12			
35	Cambridge	the speakers set them up in a way that gave the students something to talk about - they were short, and rather than re-expressing their whole paper, they introduced a few key questions.	2	3	9	11		
36	UMN		2	5	6	7	9	12
37	Cambridge	The clarity and novelty of the ideas put forth and discussed in these sessions made them interesting. Besides, I think the first 6 to 7 sessions labour to convey more or less the same conceptual and theoretical underpinnings; that make it a trifle repetitive. The later chapters are therefore new in their own way and stand separate.	4	9	11	12		
38	Cambridge							
39	Cambridge		4	8	12			
40	Cambridge	Each of these sessions spoke to my personal interests, which is probably why I enjoyed them the most. Session 9 was a bit of an outlier since she essentially presented on her own research and less on how it ties into the book, but it was also one of the stronger talks, probably for that reason. Session 11, for me, got to the heart of the material. It might have been nice to have it earlier, and since we saw a similar presentation in our own seminar in the beginning of the semester, I'm sure the material could be easily understood in the beginning of the semester.	4	9	11			
41	ASU	These session 3 and 8 had good discussions and were well facilitated. I enjoyed session 7 because the presentation clarified many of the concepts presented in Dasgupta's chapter.	3	7	8			

Not for distribution or quotation beyond seminar

42	UMN	<p>I actually enjoyed all of the sessions. The Kates session, despite some incongruence among the three groups presenting, was a really elegant way to encapsulate the relevant major trends over time. I found the discussion thought-provoking and reflected on this session for weeks afterward. The Perfecto session, while fraught with technological problems, was nevertheless a highlight for me in that I was able to see clearly how the metacommunity/metapopulation framework for thinking about land use could be linked to valuation approaches. The insight that both of these approaches could be enhanced by linking them provided inspiration for new research and scholarship for students at Minnesota and UNAM.</p> <p>The Polasky session, was thoughtful and well-integrated among the groups. While it gave real depth to the mechanics of what would be needed to measure shadow prices necessary for the Dasgupta model it also provided realism as to the challenges. The UNAM counter-approach provided a multi-dimensional alternative. Very illuminating and thought-provoking session.</p> <p>The Clark session 11 was very well received at Minnesota for its insightfulness.</p>	3	6	12			
----	-----	---	---	---	----	--	--	--

Appendix 6:

Explain why you didn't like the sessions you selected

Sessions: Of these 13 sessions, were there any that you did not enjoy or found problematic for some reason? Indicate which ones (up to three) and explain why below.					
1	Princeton				
2	UMN	There was no way to treat each topic with the attention deserved, so the entire session seemed rushed. (It ran into a common problem: too much to do, not enough time)	13		
3	FIU				
4	Cambridge	Each of these sessions disappointed me for more or less the opposite reason outlined above. Particularly for 8 and 10, I had a pretty good idea of the problems I would have liked to pose and solve. Yet in each case, the sessions seemed to orbit around the idea of solving a problem without ever actually addressing them (even King's discussion seemed to back off from answering her research question at the very last minute). The presenters seemed to be universally timid about making open statements. As this is a closed seminar based on material we're not allowed to cite, I would have appreciated researchers to go out on more of a limb, and actually expose their own opinions. Even if this should result in disagreement between authors, it is disagreement we as students should see - the sticky points should not be swept under the rug. Moreover, without some definite statement (or attempt to frame one at the end of the session), I felt like the sessions lacked meaning. We talked about a problem, agreed that it was a problem, and then ended the discussion. This neatly avoids making any headway.	6	8	10
5	Cambridge				

Not for distribution or quotation beyond seminar

6	UMN	I thought the two CHES sessions were very light on content and very heavy on obscure philosophical terms/concepts/definitions that have little use in solving problems related to sustainability and didn't serve as good educational tools either. I thought the session on convergent/divergent models was a bit of a tangent, at least where it was placed chronologically. If that session was kept, I would move it later in the course, or perhaps even make it part of the worked examples topic.	4	6	8
7	Cambridge	I don't think session 13 was done very well. I think it would have been more engaging if Bill had presented on all of the topics students posted and not jumped around from student to student. With the bad technology I get lost jumping around and I prefer to read the comments than hear them over the buzz of the remote microphone.	13		
8	Cambridge	Session 6 -- I actually enjoyed this session quite a bit, but was a bit confused by the framework. I'm not a natural scientist and had not heard of this dichotomy before (divergent vs. convergent) and it seemed like there was a deeper difference between the two views related to more general differences in values, but I didn't quite get what that was... Session 8 -- Ditto on the confusion. I think starting with a more general discussion of emergence and ways to deal with it and then identifying other aspects of it, aside from vulnerability and resilience, would be helpful, as well as some specific examples.	6	8	
9	UMN	Session 2: ignored alternative ideas and discussion of ethics. Sessions 4 and 8: lack of substance.	2	4	8
10	Cambridge				
11	Cambridge	I really did enjoy something about every session. When there were problems, they were often due to technology, or in some cases my own distractedness. I didn't love session 12 even though I quite enjoyed the readings. I think I found the student presentation underwhelming, or maybe I just disagreed with some of the main points. There seemed to be a focus on a model that was to be presented in an optional seminar on 12/3. I wasn't able to make it to that, and so found myself a bit lost.	12		
12	UMN		9	13	
13	Cambridge				
14	Cambridge	I would have preferred to hear about Dasgupta's models and chapters from Dasgupta himself, instead of from Steve. However, I understand that there were scheduling problems, which is absolutely understandable.	7		
15	UMN				
16	UNAM				
17	UMN	Too ethereal and induced unproductive debate over semantics	2	4	
18	Cambridge	It is not really fair to evaluate negatively, as it is really a personal predilection, but I did not find this metric at all credible. I'm not sure why the book is focusing on the herculean (one could say utterly impossible) task of constructing a single metric for something as complex and multidimensional as sustainability. I was genuinely relieved that the respondents introduced some of the indicator sets as an alternative.	12		
19	Cambridge				
20	Cambridge	CHES chapter was one of the most confusing ones for me. That made it harder to follow up in the seminar.	4		

Not for distribution or quotation beyond seminar

21	Cambridge	Throughout the entire course I found it difficult to transform the theory we discussed into ideal examples of studies/interventions that fitted what we might call sustainability science projects. I thought the book could provide this in some way...a chapter, or maybe even a box, that listed a number of fields from which readers might be from, and a few studies that might be called good SS projects. That way as a economist, water expert or biologist the reader would have some link to a "home-field" example of sustainability science. I understood that the book is meant to transcend disciplinary boundaries - but I think it would be valuable to have some starting point in a readers home field through which they can see an ideal study, and bridge the gap between what they previously did and SS. Session 10 didn't do this for me.	10		
22	Cambridge	A little too specific and narrowed perspective.	10		
23	UMN	I generally didn't think that Billie Turner's presentations were as well prepared as other presenters. The Ivette Perfecto session had numerous technological problems that distracted from its content, plus it felt a bit disjointed and astray from the general flow of the course. The final session on core questions was a bit difficult to engage with due to not having a central focus and many of the short student presentations here were difficult to understand.	4	6	13
24	Cambridge				
25	UNAM	Is an interesting topic, no doubt, but as we discussed at the time, in real life you cannot put a price on all ecosystem services, is not the path of sustainability	12		
26	Princeton	Steve showed us that inclusive wealth is not a great perfect but what does he suggest to fix it? Where do we go from here?	12		
27	UNAM	In general, when I found a session problematic was mainly due the poor sound and/or video we received, and that limited my participation in the interactive questions answers part.			
28	Cambridge	It was such an interesting session but at least Cambridge missed too much due to audio problems.	6		
29	Cambridge	Session 4, because the concepts were kept at a very general and abstract level and for the lack of clarifying examples Session 6, because I failed to grasp its connections with previous and subsequent sessions. In my view, there was a change of "pace" in this session because the topic was perhaps too specific. This is reflected also by the fact that this session was not attached to a book chapter.	4	6	
30	UNAM	To know the Core questions and challenges is central in science, but the session lacked of time as well as its preparation. Besides, communication was very difficult since the time we sent the core questions. I think it was bad organized.	13		
31	Princeton				
32	Cambridge				
33	Princeton	It was clear that the speaker wasn't aware of the time limits. Also, the talk was derived very directly from the book chapter so didn't add much to my understanding	5		
34	Cambridge	Session 6 interrupted the lecturing part of Perfecto and the choice of not accommodating for her to come back and finish was probably not beneficial to the overall following part.	6		
35	Cambridge				
36	UMN	They were interesting topics and the speakers did informative and attractive presentation and were great in answering questions.			
37	Cambridge	Session 7 required more elaboration and hence, appeared inadequate. Session 12 could have come together with this session since the metric is mostly founded on the neo-classical economics paradigm of rational human choice and behaviour and even, institutional impact hypothesized to be rational. As for the latter, we know that there are taken-for-granted institutions based on mental models and values and belief systems that are not efficiency seeking but legitimacy seeking and quite often, not rationally founded.	7	8	13

Not for distribution or quotation beyond seminar

38	Cambridge			
39	Cambridge			
40	Cambridge	The speaker seemed unprepared, which for this class with over 100 people participating, seems inappropriate at best.	8	
41	ASU	Session 10 was problematic because the examples provided of human-environment systems did not clearly demonstrate the multiple connections and feedbacks between both systems. It was more focused on stakeholder engagement and the environment as a driver for social problems, thus it just did not fit the title of the session. Also the issue of equity (current and future generations" was addressed only slightly, which i think left many unsatisfied. Session 13 was problematic since we left the session with no clear summary of what are core questions were.	10	13
42	UMN	Several sessions could be criticized for lack of cohesiveness or technological difficulties. But all of these were part of the experiment, as I see it. I think sessions 1 and 2 could be merged to provide room for another topic, since session 2 was the least content-heavy.		

Appendix 7:

Suggestions for Improving the Readings

Readings: Write any suggestions you have about how to improve the readings and their distribution.

1	Princeton	The required readings were good, but I seriously doubt anyone read everything every week. The different groups should have been restricted to 1 reading or at least only one really recommended reading and just offered the rest up for those who might be interested.
2	UMN	In later sessions, there were clear "required" readings (with reasonable page limits) and supplementary readings with explanations about what was found in each, so if I didn't have time to read all 10 readings, I knew what needed to be read for class and which of the others I should read to fuel my own interests and provide content for class discussions.
3	FIU	Maybe small quizzes for the undergrads after each?
4	Cambridge	Student groups should not be required to post readings. I know this will often mean that they won't post any, but I'm afraid the majority of readings appeared to be posted not because they were good and relevant, but because they had to be posted. By the end of the course, I simply ignored most of them.
5	Cambridge	The book itself and the reader, along with suggestions by the presenter, were excellent.
6	UMN	More explicitly address the motivation to include specific readings into the list. It was sometimes not very obvious.
7	Cambridge	
8	Cambridge	In terms of quantity the readings were just right. It wasn't a heavy workload, but because the content varied so dramatically across disciplines, some weeks felt like a lot of reading and others felt very light, depending on prior familiarity with the field. So... I would recommend against increasing the amount of required reading. It's better to give people a chance to absorb and contemplate a few readings than have them try to skim (but barely process) a lot.
9	UMN	I think the speaker, moderator, and students should coordinate and only assign 2 to 3 (max) readings. Having everyone propose readings just led to out of control reading lists with no prioritization.
10	Cambridge	

Not for distribution or quotation beyond seminar

11	Cambridge	There were some weeks that I felt like the sheer number of readings meant a trade-off between reading them all, or reading some thoroughly. The fact that only some were required added to this. On the other hand, I am glad to have access to all the readings and plan to go back and read more thoroughly those that I wasn't able to devote as much time to in the first round.
12	UMN	Clarify the purpose of the, at times, large number of articles recommended by the speaker, moderator, and students. Which are priorities/must reads and which are recommended for those who might be interested?
13	Cambridge	There were a lot of readings for the course. It was difficult (read impossible) to do the chapter readings, requested and supplemental readings each week, especially in the beginning. Later in the course, the readings were often not posted until much later in the week. I imagine as the chapters develop, they will be posted will in advance, but there were times when I could not keep up with the readings or the readings would appear on the Thursday/ Friday before the Monday session.
14	Cambridge	I found that my depth of engagement with topics varied greatly. For some topics, I found that my previous exposure to the material allowed me to critically "drill down" into the meat of the issue; for others, I had so little background in them that the readings left me feeling as though I only understood the most superficial aspects of the topic. I don't know how to address this, however, except by having very specific prerequisites (thus ensuring that all students are at the same level of previous knowledge--which seems problematic).
15	UMN	
16	UNAM	There was way too much reading. While having a list of relevant papers, and the PDFs is extremely useful, I believe there should be fewer readings that all should have read.
17	UMN	Too much reading in the sense that there was a lot of reading that I didn't get much out of - I often only had time to skim because there were so many. I would have preferred fewer, more strategically chosen, and more discussion of the readings during the presentation.
18	Cambridge	I thought it was a great balance! It was really interesting - and useful - to see the dialogue emerge via the different readings that the presenters and respondents posted.
19	Cambridge	
20	Cambridge	
21	Cambridge	I felt there were too many readings - often things I read were not mentioned in the sessions. A second issue was the difficulty of obtaining the readings - one didn't have a single folder that contained all the weeks readings available for a single download. Instead one had to open each session, then a tab for each speaker, then a tab for each reading, then save as each reading. Trivial I know, but could be improved
22	Cambridge	
23	UMN	All presenters should prioritize the readings they suggest to help students manage their reading selection. It is good to give us access to many readings, but realistically we will not have time to read them all every week.
24	Cambridge	It could be clearer what readings would be discussed, particularly from the reader and student suggested readings. There should be a greater payoff, reflected in deeper discussion of all material, for doing the readings.
25	UNAM	-
26	Princeton	Towards the end of the semester, the readings were numbered as "Priority" versus less important in terms of articles suggested by the presenters. My suggestion is that this idea of mini-descriptions of article priority are presented on the website.

Not for distribution or quotation beyond seminar

27	UNAM	Having all the readings from the beginning of the seminar could be very useful. Also, at the end of the course, having all the readings and presentations in one folder, separated by session and by section (speaker, moderatos, discussant) would be great.
28	Cambridge	
29	Cambridge	Note: I'm not familiar with the amount of reading required by other courses at Harvard or elsewhere in the US. When a chapter (in an advance state of drafting) was also provided, it was much easier to "navigate" among the reading, because in most cases they were clearly connected to specific part/topic of the chapter.
30	UNAM	Probably the readings would be elected more carefully, but at the same time giving different perspectives.
31	Princeton	Better guidance on what will be focus of seminar and what is supplementary.
32	Cambridge	I just want to qualify my answer regarding the amount of reading. Much of the reading was new for me and so it would take me a while to digest it. This may not have been the case for others.
33	Princeton	The readings seemed like a hodge-podge sometimes. Trying to incorporate the "Reader" was a stretch. It is a valuable resource in and of itself. A similar course could easily be structured around it. But to try to follow the approach framework from the book AND utilize the reader, which had a very different organizational structure, just didn't gel. In choosing supplementary readings, I wished that groups had given more consideration to the lengths and potency of the articles selected. Some articles were really long and only tangential to the points that the speaker or the discussant groups were making. I was not concerned, however, by discussant readings that were tangential to the chapter focus. In fact, I liked readings that took ideas in quite different directions. Those readings added a lot to the course for me. But I did appreciate when those readings to have an important relationship to the discussants' presentations.
34	Cambridge	
35	Cambridge	The amount of reading varied by week - some weeks it was too much, others too little, but on average ok. Best when 3-4 short papers or 2 longer ones.
36	UMN	
37	Cambridge	Some of the readings were rather unrelated to the session being taken up for discussion. The readings were also not well spread out across disciplines. Most of the readings were from the stream of ecological and geographical sciences leaving out readings from public policy and institution area.
38	Cambridge	The website was very confusing. I found it difficult to figure out what reading was required and where to get the files.
39	Cambridge	
40	Cambridge	Obviously, the book chapters just need to be improved overall. The published readings were all quite interesting. I do think there could be more depth explored in each field in the supplementary readings, but this gets into a separate discussion about focusing on sustainability science vs. the constitutive fields.
41	ASU	I think it is not the reading load, but the quality of the readings and what exactly we want to get from the readings is where we should focus our efforts. Sometimes we were given such a diversity of readings that as a participant I was unsure of what exactly which areas to focus on or we were provided with minimal substance regarding the topic at hand. I think finding the right mix of readings will take time, but should constantly be re-examined.

Not for distribution or quotation beyond seminar

42	UMN	I think towards the end when we had settled on one reading from the book and two recommended additional readings, this worked well. There is no problem, in theory, with having the many readings available, but clarifying how to prioritize them turned out to be a bit tricky. Some groups solved this by having individuals read and report and different papers.
----	-----	---

Appendix 8:

Workload

2	UMN	Credit student	More or different in a specific way (elaborate below)	I expected a seminar where I needed to do a little reading and pay attention in class but did not expect the amount of reading for each session and the side work of preparing slides or write-ups. This was not bad, just unexpected.
41	ASU	Credit student	Fine	I think it was sufficient since the focus of the seminar should be around thought provoking discussions.
6	UMN	Credit student	Great - just the right amount of work for what I was expecting.	I thought the high levels of group work in both presenting and writing was a great opportunity for students to practice working collaboratively.
29	Cambridge	Auditor	Fine	I'm not familiar with the workload of similar courses at Harvard or elsewhere in the US. However, it seems reasonable for the type of class and within the order of magnitude of the workload of the postgraduate courses I'm familiar with.
16	UNAM	Faculty/teaching staff	More than commensurate classes	It was a huge load to keep up with the lectures, preparing the student's or faculty responses, and helping the students with the corresponding essays. Yet it was worth it. The students learned a lot, worked very hard, and the discussions were very relevant beyond the small group of students
9	UMN	Auditor	More than commensurate classes	More work than I was expecting as an auditor. However, it was fun and I enjoyed it.
5	Cambridge	Auditor	Fine	The amount of online comments became somewhat overwhelming with time.
33	Princeton	Faculty/teaching staff	More than commensurate classes	The responsibilities put on the student groups (and the faculty overseeing them) was much more than expected. In theory, student groups coordinated their presentations with an other-campus faculty member. But in practice, faculty were involved in both their own students' presentations AND with other students for whom they were serving as moderators. I got the feeling this was more of an issue at institutions where students didn't have a strong prior background in the field.
35	Cambridge	Credit student	More than commensurate classes	The website took a lot of time. If the readings were shorter, we could have spent more time engaging online.

Not for distribution or quotation beyond seminar

13	Cambridge	Credit student	Fine	The work load was manageable. A ton of reading, but I am looking forward to the final project.
21	Cambridge	Auditor	More or different in a specific way (elaborate below)	The workload was fine as one could be variably involved in each session etc.
42	UMN	Faculty/teaching staff	Fine	The workload was not equally distributed among the faculty. This is something I should have worked harder at to even out early on.
8	Cambridge	Credit student	Great - just the right amount of work for what I was expecting.	The workload wasn't heavy in terms of quantity, but trying to incorporate several disciplines as it did, it was very conceptually difficult.
3	FIU	Credit student	More or different in a specific way (elaborate below)	This was very different than I had anticipated. Not necessarily good or bad, but different.

Appendix 9:

Experience working with/learning from students at other universities

		For all students, how much do you feel you benefited from working with and hearing from students from other universities? What would you change about that process?
26	Princeton	Excellent. The student component should not be changed in terms of content but rather I believe that leniency on length of presentation (i.e. 20-25 minutes) would be helpful. Often times the student groups were rushed because an earlier presenter took too much time (The students group deserve the full amount of time too).
5	Cambridge	Frankly, not very much. The most profitable part of the seminar was the discussion after the online system was shut down.
25	UNAM	Great, you learn a lot of the different views each institution has.
20	Cambridge	Having the space for discussion for both multi-university seminar and our own Cambridge seminar is ideal. I think the seminar as it is did a good job on that.
23	UMN	I benefited quite a bit, and would have liked more opportunities for interaction and collaboration. I think seminar organizers could do more to encourage and facilitate this and maybe even utilize some of the technology used for the course for students from different universities (but not the whole group) to meet together.
35	Cambridge	I benefited very little, if at all, from students at other universities, because they were far away. I made the strongest connections with those students from MIT and Harvard, because they were closer and more active on the website.
38	Cambridge	I don't feel like I got much from the interactions with students at other universities. This may be because I had trouble understanding most of the discussion to begin with and was unable to ask questions for clarification.

Not for distribution or quotation beyond seminar

29	Cambridge	I enjoyed a lot the presentation and comments from students from other universities. Given that the audio was sometimes bad and the time limited, I suggest that only one student make the presentation for each session (rather than splitting the presentation between 2-3 students).
7	Cambridge	I enjoyed working with other universities but i don't think we need as many. Perhaps 3 (Harvard-MIT and two additional) is a good number so we can get to know the groups better. With fewer students from other universities involved it would be possible to get a better feeling for who the other students are. Right now I do not feel like I know much about their research interests or ideas because all of the universities blend together for me.
10	Cambridge	I feel like I benefitted from the professors who presented from the other universities more than from the other students. I got the least out of the student presentations, and think that perhaps that time might have been better spent having a more in-depth discussion of the issues--something that often got cut off just as it was getting interesting. I think more discussion might have also helped integrate the group a bit more. But the presentations as they were seemed a bit tacked on, and didn't really add very much for me.
18	Cambridge	I really appreciated the feedback and assistance that the faculty respondent (Lizzie King) provided to us.
41	ASU	I think inter-institutional collaboration could be increased, however it is challenging. I enjoyed hearing from other students, but the discussion board could have been used a bit more effectively by everyone.
12	UMN	I think it's unquestionably valuable to have the experience of going through the class with students from other institutions, and I appreciated that one group was from outside the U.S. Could we have more from outside the U.S.? While I benefited from having to correspond with students from other institutions, I think the course could create a clear process and expectation, instead of leaving it quite open and unstructured.
6	UMN	I thought it was valuable to be exposed to the world-views/ways of thinking at other institutions. Many of the institutions had different demographics in terms of majors among their students and that was an additional dimension of diversity which was beneficial.
30	UNAM	I was benefited with satisfaction. The knowledge and experiences from the students of the other universities was useful for me and the seminar, but probably I could have taken more advantage from the experience if communication were more direct. Of course it is difficult due to the nature and distances in the seminar.

Not for distribution or quotation beyond seminar

14	Cambridge	<p>I was disappointed by the lack of MEANINGFUL engagement with students outside of Harvard/MIT. I love the idea of collaborating with students from other universities--it was one of the things that I was most excited about--but this seminar did not really achieve that in the way I was hoping. One suggestion would be to limit the seminar to schools within a geographic area, and then scheduling actual "face to face" seminar meetings twice or three times per semester. For example, if the seminar consisted of Harvard, MIT, Brown, Columbia and Yale, then we could have large in-person meetings at the beginning, middle and end of the semester in Boston, New York, and Providence. Placing students into cross-university "teams" (which would then turn into either the presentation groups or the final paper groups) at the first meeting would also encourage such collaboration. However, this would probably be quite difficult to actually carry out.</p>
2	UMN	<p>I worked with students from Princeton to respond to a session, which I thought was great. It's nice to meet others who are interested in the same thing but from a different perspective. We met twice over Skype, and it was also invaluable to have started the collaboration early!</p>
24	Cambridge	<p>In our session group, we tried to work with other students. Overall, this proved a challenging and limited experience. That said, hearing from other students week to week was good, and some of the student presentations were first rate. If not the students, I particularly enjoyed hearing presentations from the various faculty, which was a unique opportunity.</p>
40	Cambridge	<p>It seems like the Cambridge group dominated a lot of the seminar, so it's hard to determine how much the participation from the other schools specifically contributed to my thoughts on the material. I do think it focused our discussion more, and gave us different things to think about than might have come up in our own group. Also, the presentations from UNAM were particularly strong.</p>

Not for distribution or quotation beyond seminar

8	Cambridge	<p>It was great to hear opinions from different institutions (I think sometimes we are in a Cambridge bubble over here). I particularly enjoyed the Garcia-Barrios stuff (though I had to miss that extra session), which I don't think I'd have been exposed to without this class.</p> <p>What I'd change: There's got to be a way to organize the discussions across universities a little differently so they feel more like a conversation. Maybe part of the problem was the large size of our individual group? Even though I know it's not true, it made me feel as though there was an equally large group at each university and as such I sometimes felt a bit discouraged from speaking in front of such a large group of people...</p> <p>In our small group project, we worked with a student at another university. He was great and very helpful and contributed quite a bit, but communication was difficult. It's hard to have that type of discussion (about sorting out terms and making sure we're all on the same page) with some people in person and some over Skype. It was difficult to rope him in entirely.</p> <p>Also, I often felt like we were the only group commenting on the group page. In a future version of this, I'd have all groups write mandatory comments -- not necessarily for each person for every session (as that might result in people writing when they have nothing to say), but maybe each person must comment on x number of sessions. Or, alternatively, each group must collectively decide on a few choice questions/comments to post before each session. I think this would help make the cross-university discussion session more fruitful as well.</p>
17	UMN	<p>My cross-institution group was quite small (6 students), which meant that we were able to effectively dialogue between us and really hear each other out. I would imagine that would have been difficult with too many more people.</p>
27	UNAM	<p>One of the most valuable things were hearing the experiences and visions from students of other universities. As mentioned below, I would encourage a more country-diverse participation for the next seminar.</p>
11	Cambridge	<p>Some. I did feel after some time that the Cambridge group were the major players on the discussion forums (though there were some other frequent contributors). But there were some schools that I hardly heard from. I imagine they got to know each other - but I think there's a lot more untapped potential for inter-university involvement. The student presentations were mixed and I'm not sure I'd repeat them in a future year - at least not in the same format.</p>
9	UMN	<p>This is an extremely valuable part of the course. It was great interacting with folks from another institution.</p>

Not for distribution or quotation beyond seminar

13	Cambridge	<p>This was the most beneficial component of the course, but also the portion of the course where I think there is the greatest opportunity for improvement. Other than the group discussions and online forum, there was not too much collaboration.</p> <p>I would not have minded being assigned to a cross university discussion group in order to reflect weekly on the sessions and then post as a group to the discussion board. In this way we are forced to interact and can benefit from other's expertise on readings and discussions that might be out of our comfort zone.</p>
37	Cambridge	Very useful and enriching. But I would rather want a little more pedagogy by the expert or the author/speaker introducing a particular session. Also, continuity amongst the sessions is often not clear. They seem to stand alone.
31	Princeton	We had a great collaboration with the Minnesota students!
36	UMN	<p>Worked very well in discussing things online.</p> <p>Did not work so well in terms of participating together in a session.</p>

Appendix 10:

Technology Recommendations

		Technology: What would you recommend to improve the use of technology to benefit future participants?
38	Cambridge	<ol style="list-style-type: none"> 1. The NCEAS website was poorly organized making it difficult to find the required reading or even which session was happening on what day. There MUST be a way to make this more obvious. 2. The emails from the NCEAS website didn't contain any actual information other than the link. This made it too easy to miss timely messages.
24	Cambridge	A static picture of each student as they spoke or posed a question would be great. Could be difficult to accomplish, but would greatly benefit getting to know other participants.
10	Cambridge	As I said above, I think the video technology needs to be improved. I'm not sure why it was so poor, or if it's possible to improve it at all the universities. But it was often problematic to have such small images projected onto a big screen.
36	UMN	Audio and its use by all participants. This is more a people problem than a technology problem.
5	Cambridge	Audio quality was often insufficient
33	Princeton	<p>Discussion forums: I would recommend a maximum length of discussion entries, somewhere around 2 paragraphs. If a discussion were going on live, in person, one person talking for 10 minutes would be noticeably stifling to the generation of dialogue. I think the same actually holds true for online discussions, where 7 paragraphs has a similar effect. Video: it would have been nice to see the presenter more clearly (i.e., larger), and reduce the size of the powerpoint screen. A minimum font size could be prescribed to ensure that a smaller powerpoint screen didn't cause visibility problems. As it was, most slides were prepared with giant font anyway, while the speaker was tiny.</p>
32	Cambridge	For your own benefit, if there is budget, you could use a service to have the post presentation discussions transcribed. I think most of the valuable commentary is captured in the summaries, but there's something about having the actual meeting minutes to refer back to.

Not for distribution or quotation beyond seminar

6	UMN	I found that often the speakers were not loud enough and it was usually because they were not speaking into the microphones properly. I think it would be valuable to give each of the instructors a quick crash course in the technology before the start of the course (e.g. teach them stuff like the range of sensitivity of condenser microphones vs. regular ones)
11	Cambridge	I think the audio was the most problematic part. We don't really need to see talking heads I think - there ought to be a way to put of a still head shot of the person speaking, and focus the bandwidth on getting the slides to load well and the audio (if the audio goes through the internet, I'm not sure of that). Also - the NCEAS website is useful, but far from perfect. I feel certain that there are other ways to format and organize content and discussion groups of the kind we needed for the class.
41	ASU	Increase discussion board use.
26	Princeton	Less discussion topics! By the end of the semester is was more organized but initially, the discussion board was extremely packed with many lengthy, stream of consciousness responses. In order to facilitate actually discussions on the discussion board, I recommend some sort of maximum word cap so that the individual posting is forced to be concise.
35	Cambridge	less time presenting powerpoints and more time discussing
8	Cambridge	Only a few times, the audio was problematic -- I think even after we were told many times to turn off wireless devices, I still saw a lot of people on laptops and wondered if they really had the wireless turned off... Also the picture quality when seeing people speaking at other universities was sometimes poor and that really added to the problem of it not feeling like a "discussion", because I didn't feel like I really knew who I was talking or listening to. I heard one person suggest high quality photos of each person as they speak, instead of (or in addition to) poor quality video, and I thought that was a great idea.
14	Cambridge	Require ALL students at ALL schools to post to the discussion board!!!!!! I was increasingly frustrated that the Cambridge group was the only one posting, as I sincerely wanted to engage with students from other schools!
16	UNAM	Sound was very hard at times and discussion sessions were in general very hard to follow for us. Not all the materials for each class (e.g. recording, powerpoint) were available.
28	Cambridge	Speakers were often extremely hard to understand due to poor audio quality. This might have been worse for international students and it actually had been worse if non-native presenter have spoken. I don't have any good advice for improving the audio quality, sorry. There was sometimes confusion when to use the NCEAS website and when the course website. Everything we used the google group for could have been done via email.
29	Cambridge	The audio was not always good (especially during the presentations of the student groups). The use of the discussion forum decreased during the course (especially outside the Cambridge group) and should be promoted (for instance by having students to post a comment at least every other session)
13	Cambridge	The technology was excellent and I think worked as well as could have been expected. It was a little difficult to see presenters at times. Also, when reviewing the discussion it is difficult to hear sometimes. If possible, it would have someone transcribe subtitles for people who wanted to re-watch the discussion.
12	UMN	The technology, despite its glitches, functioned pretty well given the number of potential problems across six sites. It strikes me, having watched Michelle from U of MN set up and run the tech every seminar, that having a competent tech person on-site during the seminar is absolutely essential.

Not for distribution or quotation beyond seminar

4	Cambridge	The video is on the whole distracting and adds nothing to the seminar. The NCEAS website is horrid, and was incredibly frustrating since in order to access any readings or discussion, you had to click through three levels of folders (each specific to only one reading or one discussion), and all pages loaded very slowly. On a T1 connection, it took me on average about a minute to access and download each reading, which was simply annoying.
20	Cambridge	The video quality should be improved. Sometimes it was hard to see the speakers. Either because the light was too dim or the distance from the camera too far.
21	Cambridge	The video worked well for presenters (chapter presenters) where it was zoomed in, in focus and high quality. Most of the student presenters and other people had distracting video quality.
2	UMN	The way we organized the video later in the semester, especially changing the view between the presentations and the Q&A/discussion was great.
40	Cambridge	There has to be a better way to deal with the video.
19	Cambridge	There is more modern equipment for video conferences
42	UMN	This is a tough one. We could do a lot better, but anything we try will continue to be challenging until the technology catches up to goals of these and other similar efforts. If we do this again, it will be critical to have back up recordings.
9	UMN	video could be larger

Appendix 11:

Timing Recommendations

		Timing: If you were to change the meeting time, what would be better?
35	Cambridge	1.5 hours, two times per week. Hard to stay engaged a full two hours. Second session would be helpful in keeping conversations going.
10	Cambridge	An extra course meeting just for the Cambridge group would have been great, even if it was just an hour or 1.5-hour meeting for discussion and follow-up on the issues.
21	Cambridge	I particularly liked the 4-6 slot - it allowed me to do a fullish day's work before attending the course, rather than breaking my day in two.
11	Cambridge	I think an individual group session would have been valuable. Some groups had this I believe, but our (Cambridge group) did not except for those students who were actively working on preparing a chapter response. We did write on the NCEAS site and our own google site, but I feel like there are probably other valuable voices we would have heard from in a smaller group session who felt too busy or perhaps intimidated to write much on the discussion forums.
40	Cambridge	I think the material needed more time, especially since so many people had little to no familiarity with the bulk of it. Either a separate course time each week, or a whole previous semester to get everyone up to speed on sustainability science. It took the first half of the semester to even get people able to communicate using the same language. I really think for the goals of this semester, commenting on the book project, most participants needed a semester to prep - for eg. by doing the supplemental readings and discussion about how the disciplines are integrated, and why, in sust. sci.

Not for distribution or quotation beyond seminar

32	Cambridge	I think the time was great, but it might be useful to add an additional hour later in the week for just the Cambridge class to meet.
8	Cambridge	<p>I think we should have a bit more local discussion. Not necessarily through a second lecture time, but perhaps through a weekly scheduled small group meeting. We could meet in groups of 5 or so and change the groups each week so that we all get to know each other better. Each group could then post a brief summary of our discussion or questions we had to the course website. Or, these group sessions could happen before the Monday class, and then they could inform the discussion in the entire group, with each group reporting back on what conclusions they came to or what they were confused about.</p> <p>Alternatively, something similar could be done across universities, with us each reaching out to 2 or 3 people at other universities to chat each week, helping us to actually develop personal connections with the other groups. (Put a face -- and personality -- to the names on the screen.)</p>
13	Cambridge	I would have also had an optional review section during the week to discuss readings/ that week's discussion.
19	Cambridge	I would have appreciated to have more time for discussion.
5	Cambridge	Keep the online discussion more focused. Have some time for local identification of major discussion points before the on-line part starts and half an hour after it (see below).
7	Cambridge	make it twice per week. once with all of the universities together and the technology and then a follow-up for discussion with just cambridge-MIT for an hour. This could even be directly after the group session maybe with a .5 hour break to refresh.
37	Cambridge	One and a half hour twice a week so that the topics get covered to adequate depth and the readings get spread out. There could be more discussion as well.
2	UMN	The joint session should have been a full 2 hours instead of 90 minutes. I'd also have liked a separate discussion-only session, maybe only for 30-60 minutes, but to really hash out some of the topics brought up on Monday.
16	UNAM	The particular time of day was terrible for us. Yet the length was ok, as longer would have been much harder to follow
38	Cambridge	There needs to be more time with the local group only as it is so difficult to have the cross-institution discussions.
24	Cambridge	Three hours, 1.5 presentation/discussion with NCEAS, 1.5 discussion with home group, would be preferable. Could be split into two different days (e.g. Monday and Wed. mtgs)
28	Cambridge	Two meetings per week (one of them privately) would have been better.
18	Cambridge	Would have liked more time for sub-group (i.e. local) discussion.

Not for distribution or quotation beyond seminar

Appendix 12:

Individual Group Meetings

		Timing: If your group met separately during the week, please indicate when you met, whether you found those meetings helpful, and why.
41	ASU	We met Friday from 1-2pm. The meetings were extremely helpful since they allowed us to discuss in detail about the readings prior to the session, which allowed us to cover basic questions and explore certain areas more in depth.
38	Cambridge	We did not, but I think it would have been beneficial.
37	Cambridge	We met often separately either in full group or in part group. But there was a continuous stream of discussions going due to web postings in the NCEAS website.
31	Princeton	Friday 10:00. The meetings were helpful because it gave us more time for discussion.
26	Princeton	Friday 10-11AM. These meetings were extremely helpful to summarize the past week as well as prepare for the next.
33	Princeton	We met for an hour on Friday, and for 1/2 hour before the session. Both times were really useful. Our hour meetings were a great time to discuss our take on the last sessions' ideas. Also, they were invaluable as prep time for the student commentaries, subsequent writeups, and in formulating a 'group response' to post for each session.
17	UMN	Loved the small discussions we had an U of MN - could talk through some of the issues at length and not just via the Q and A at the end of Monday.
6	UMN	Our group met Wednesdays and it was a very helpful forum for us to debrief on the Monday session.
23	UMN	Wed, 3:00-4:30 Central Time. The discussions in these sessions were tremendously lively and fun (although also tended to wander off topic). I got more out of these discussions than the Monday sessions with the whole group.
42	UMN	Wednesday afternoons same time. This was a really valuable opportunity for us to discuss the previous session and readings and to prepare for the upcoming session and preview the readings.
2	UMN	Wednesday from 3-4:30 LOVED these meetings, where there was a lot more discussion, more participation, and explanation of concepts that were still too abstract after Monday's session.
36	UMN	Wednesdays at 3. Very helpful discussions of the Monday sessions. Helped me understand the topics better.
27	UNAM	Every thursday from 9am to 2pm. This time was used to discuss the previous and the next sessions and to built a collective response to the session. We also discussed about the final essay during these time.
30	UNAM	Once per week for 4 hours in the morning. The meetings were really helpful because they permitted us to discuss deeper about the themes.
25	UNAM	Thursdays, 4 hours. Group discussion about the previous session and the following
16	UNAM	We met on thursdays from 10 AM to 3 PM. The sessions were extremely helpfull to carefully go through the previous class and prepare collectively the discussion, to prepare for the next class, and to prepare for the student's response and corresponding essays.

Appendix 13:

Class Structure Recommendations

		<p>Class structure: We followed a fairly consistent structure in each of our class sessions: speaker presentation (about 30 minutes), moderator comments (about 15 minutes), student respondent group presentation (about 15 minutes), questions and answers to and from the speaker, moderator, and student group (about 30 minutes). This all-seminar structure was followed by about 30 minutes of individual group further discussion. What do you think of this structure?</p>	<p>Class structure: What changes would you recommend?</p>
1	Princeton	Fine	I thought the moderator's comments were really a waste of time. I liked the format much better once we got rid of that. I think the students should be given a bit more time.
2	UMN	Great	Structure was great in theory. In practice, it was too bad that class always seemed to start 10-15 minutes late, though, which ended up eating into the moderator's or students' presentations. I'd have liked to hear them out!
3	FIU	Fine	
4	Cambridge	I'd change it. (elaborate below)	As outlined above, I would remove student presentations in favor of more time for closed discussion within each group (for example, Cambridge-group only).
5	Cambridge	I'd change it. (elaborate below)	30 minutes local preparation, 20 minutes online presentation, 10 minutes comments (only by students), 30 minutes online discussion (structured along the questions identified by the different local groups), 30 minutes final local discussion
6	UMN	Fine	This structure was great when we stuck to it, but I thought sometimes the general discussions were too short. It might be worth getting rid of the moderator comments section.
7	Cambridge	I'd change it. (elaborate below)	Leave out moderator---more time for discussion.
8	Cambridge	I'd change it. (elaborate below)	In general, I liked it. Just a few ideas though: At times I thought that the moderator comments and student comments could have been combined. Sometimes I also wondered if we should have the individual group discussion before the q&a with everyone, because I felt more ideas came out in the more personal setting, and then those could perhaps be incorporated into the q&a to the benefit of everyone?
9	UMN	Fine	
10	Cambridge	I'd change it. (elaborate below)	I'd eliminate the student presentations and expand the discussion.
11	Cambridge	I'd change it. (elaborate below)	Longer speaker presentation, longer (professional) response or add on presentation, maybe no student presentations at all? and more time for Q&A possibly with some Q's queued up ahead of time.
12	UMN		

Not for distribution or quotation beyond seminar

13	Cambridge	Fine	Perhaps more time for group discussion, but ok.
14	Cambridge	I'd change it. (elaborate below)	I did not get a lot out of the student presentations. I think the student presentations were a valuable exercise, but their quality varied greatly, and the topics they discussed weren't always aligned with the issues that I found most compelling.
15	UMN	Great	
16	UNAM	Fine	I would have used more the chat for the discussion session to help non-native us speakers to follow better
17	UMN	Fine	
18	Cambridge	Great	
19	Cambridge	I'd change it. (elaborate below)	Some topics were very complex, but it was difficult to ask complex questions because of limits of time.
20	Cambridge	Great	
21	Cambridge	I'd change it. (elaborate below)	I felt the individual group discussion was of more use than the student respondent group discussion.
22	Cambridge	Great	
23	UMN	Fine	
24	Cambridge	I'd change it. (elaborate below)	Moderator comments were too long in many instances.
25	UNAM	Fine	Group presentation 20 min
26	Princeton	I'd change it. (elaborate below)	No moderator formal presentation.. just quick comments (1-3 minutes)
27	UNAM	Great	
28	Cambridge	I'd change it. (elaborate below)	The several presentations provided sometimes too much input and the Q&A section weren't that helpful. More time for real discussion would have been better.
29	Cambridge	Great	I enjoyed the structure a lot.
30	UNAM	Fine	I think the time for each participant was not enough. Probably five more minutes or a kind of "buffer" minutes would be useful.
31	Princeton	I'd change it. (elaborate below)	Less time on moderator comments in middle
32	Cambridge	Great	
33	Princeton	Fine	I think the moderator and student group should decide how to share a 25-30 minute slot. In some cases, that could mean 15 and 15, but in others, a 5 minute segue by the moderator and 20 min by students would work better. They could choose by consensus among themselves, but keeping the total time within a bound.
34	Cambridge	Great	
35	Cambridge	I'd change it. (elaborate below)	Skip almost all the presenting - just pose a few questions and let us discuss.
36	UMN	Great	
37	Cambridge	I'd change it. (elaborate below)	Speaker presentation should be for one hour and the moderator comments may not be necessary or should form a part of the discussions at the end of the student group presentations.
38	Cambridge		
39	Cambridge	Great	
40	Cambridge	I'd change it. (elaborate below)	For us, we could have used an hour of individual discussion time.
41	ASU	I'd change it. (elaborate below)	I would eliminate the 15 minute moderator time slot, and have the students focus on presenting questions or discussion topics, so that the sessions have a speaker present, followed by students commenting on the material w/ discussion questions, and subsequently followed by group discussion.
42	UMN	Fine	In the end, I thought this worked quite well.

Not for distribution or quotation beyond seminar

Appendix 14:

Final Thoughts

Anything else you'd like to add?		
4	Cambridge	<p>A chapter which appears to be missing from the book is an applications chapter. That is, having outlined a method for approaching sustainability science, the authors should all get together and use it to solve an actual problem (or model problem). Though the book claims to be co-written on every chapter, it often feels sadly like a book where each set of authors wrote their own chapters with a few critiques from co-authors (with the notable exception of the first two readings).</p> <p>I feel it would be a disservice and a waste to not take advantage of the absolutely stellar cast of "Airbus Professors" to both demonstrate how this exciting new model of problem solving can be applied, and to perhaps even solve an important problem.</p> <p>Case studies cited in the book do not work because they are based on only a handful of disciple's methods for problem solving: precisely the method that this book aims to improve upon.</p> <p>The Arrow and Gupta example does not count because, in my opinion, it was vastly oversimplified to the point of irrelevance. I think it is very exciting, mathematically elegant, and certainly useful, but failed to take advantage of other author's expertise. It included absolutely no input from the CHES outlined in other chapters, and barely tipped its hat to the biogeochemical, biological, and social cycles which the other authors are fluent in.</p>
29	Cambridge	<p>A final note relevant to the seminar in the context of the SSP at Harvard: I believe the seminar has been a fundamental element in the program so far for at least two reasons: 1. It gave us a sort of common basis that helped the fellows in both presenting their own research proposal and commenting on other fellow's proposals (for instance many key words needed not to be defined during the presentations because reference was made to concepts discussed in the seminar) 2. It allowed systematic interactions among (especially off-site) fellows</p>
40	Cambridge	Despite many issues, it was a fascinating learning experience. Thanks for a great semester!
11	Cambridge	Hope it happens again!
19	Cambridge	I would like to continue this discussion (within the limits of my professional obligations)!
38	Cambridge	If you want a wide audience of students to take this course I think that there needs to be more effort made to define terms and provide the opportunity to get speakers and those asking questions to explain themselves using less jargon.
21	Cambridge	It helped me formulate my ideas about bridging the gap between science and public policy/ government.
5	Cambridge	It was a great experiment! And overall I learned a lot. I am considering to run similar (however in much less complex settings) seminars after my return.
37	Cambridge	Over all, I liked it. It was great. I thought the student small-group discussions could have been mandatorily kept going for all sessions instead of just the session for which one had to respond. That would have allowed much more elaborate and free flow of discussions - without audio and video 'noise'.
26	Princeton	Overall great seminar and by the end of the semester, a lot of kinks were worked out! Thanks for the experience !
17	UMN	Really ambitious, creative idea that you totally pulled off on a logistical level - congrats. With slightly different content, would have been an A+ course. As it stands, an interesting experience.
20	Cambridge	Thanks for letting natural scientist participate in this seminar! As I expressed in our last session I believe the definition of sustainability will greatly benefit from hearing the views of psychologists working in the field of positive psychology. I would suggest inviting students and faculty from labs working in this area.
16	UNAM	The experience was excellent, we learned a lot not only on sustainability science but also on how to run a multiinstitutional course. If I was available next year I would do it again.
8	Cambridge	This has been a wonderful learning experience and I look forward to seeing future iterations of the book!

Not for distribution or quotation beyond seminar

13	Cambridge	<p>This was a great seminar. The content was a little bit beyond the scope of my knowledge in many arenas. Thus, I think I and many others would have benefited from structure opportunities to discuss and respond to the readings and discussions in groups. I often found it difficult to respond to sections for which I was really being exposed to brand new content.</p> <p>I would recommend that you continue this seminar. It will only get better with time as the materials for the text and seminar norms become more refined. I would encourage you again to provide more structured opportunities for reflection of material and cross institution collaboration.</p>
27	UNAM	<p>To convert video of sessions in a kind of podcasts in order to keep them as study material and to play through a variety of devices.</p>

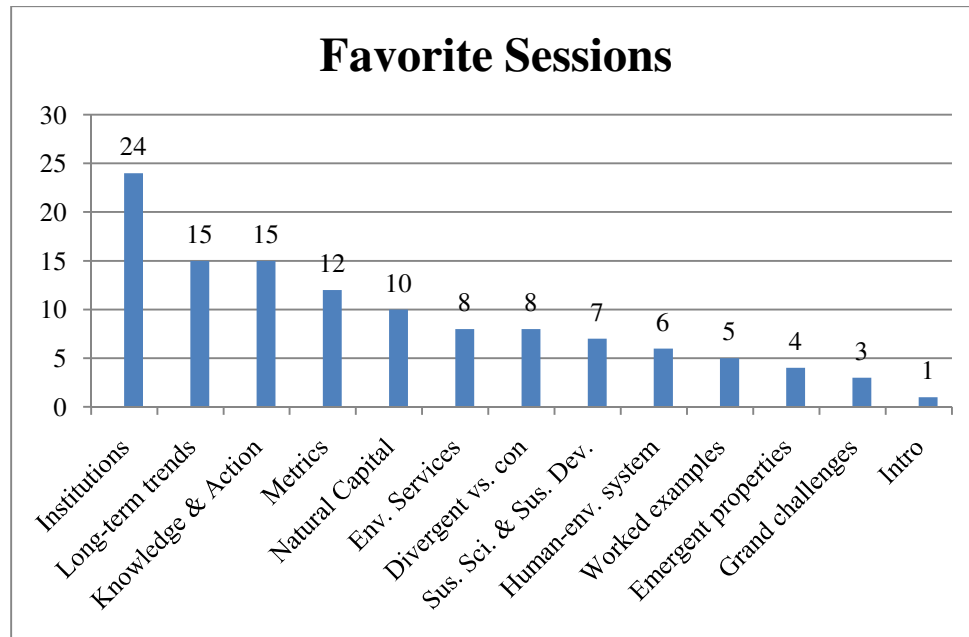
Appendix 15:

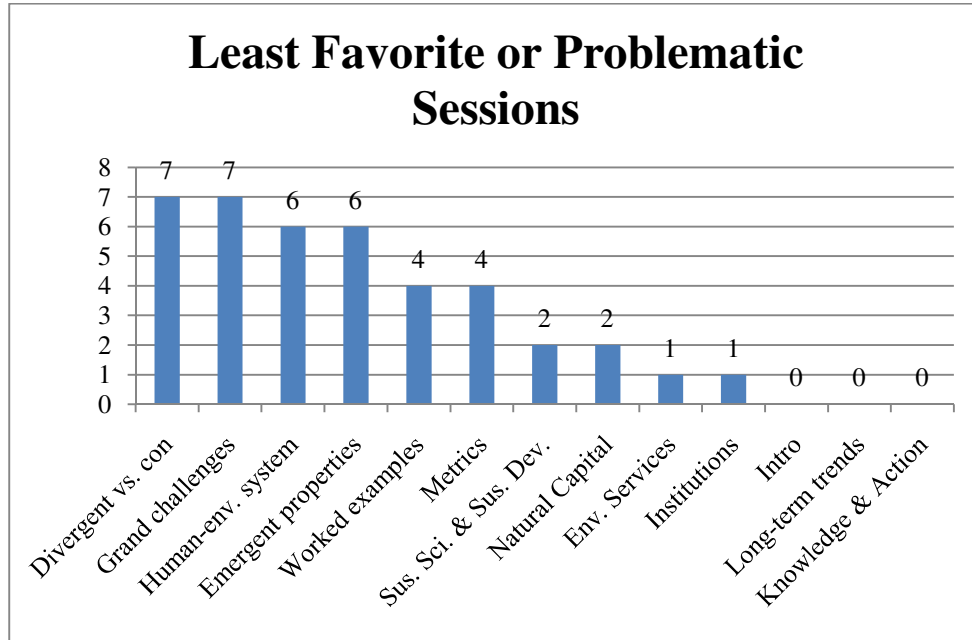
Feedback: Session by Session

The 13 Sessions of the Sustainability Science Seminar were:

1. 09.13.10 Introduction
2. 09.20.2010 Sustainability Science and Sustainable Development (Speaker: Bill Clark)
3. 09.27.2010 Long-term trends and transitions in nature and society (Speaker: Robert Kates)
4. 10.4.2010 The human-environment system: A conceptual framework (Speaker: B.L. Turner II)
5. 10.11.2010 The environmental services that flow from natural capital (Speaker: Steve Carpenter)
6. 10.18.2010 Divergent vs. convergent development models (Speaker: Ivette Perfecto)
7. 10.25.2010 Human well-being, natural capital and sustainable development (Speaker: Stephen Polasky)
8. 11.01.2010 Emergent properties of coupled human-environment systems (Speaker: B.L. Turner II)
9. 11.08.2010 Institutions for managing human-environment systems (Speaker: Elinor Ostrom)
10. 11.15.2010 Worked examples of concepts in human- environment systems (Speaker: Elizabeth King)
11. 11.22.2010 Linking Knowledge with Action for Sustainability (Speaker: Bill Clark)
12. 11.29.2010 Metrics for sustainable development (Speaker: Steve Polasky)
13. 12.06.2010 Grand challenges and core questions of sustainability science (Speaker: Bill Clark)

Below are the cumulative summaries of session mentions as favorites and least favorites. Note that far more favorites were selected than least favorites, and some sessions received no votes as a least favorite.





In abbreviated form (used in the graphs) they are:

1. Intro
2. Sus. Sci. & Sus. Dev.
3. Long-term trends
4. Human-env. system
5. Env. Services
6. Divergent vs. con
7. Natural Capital
8. Emergent properties
9. Institutions
10. Worked examples
11. Knowledge & Action
12. Metrics
13. Grand challenges

Not for distribution or quotation beyond seminar

Note: The number to the far left in the comments below refers to the respondent number – an arbitrary but consistent designation to track individuals’ responses. The numbers to the right of the responses indicate all the sessions that the commenter selected for the topic (e.g. the numbers to the right of each comment in the “favorites” section are all the sessions that the commenter flagged as favorites.) Where applicable, comments have been broken down by session. Some commenters offered blanket statements over all their selected sessions.

1. Introduction

Likes

5	Cambridge	The flow of the overall design of the book became most visible in these sessions.	1	2	7	9	11	
---	-----------	---	---	---	---	---	----	--

Dislikes

42	UMN	Several sessions could be criticized for lack of cohesiveness or technological difficulties. But all of these were part of the experiment, as I see it. I think sessions 1 and 2 could be merged to provide room for another topic, since session 2 was the least content-heavy.						
----	-----	--	--	--	--	--	--	--

2. Sustainability Science and Sustainable Development (Speaker: Bill Clark)

Likes

35	Cambridge	The speakers set them up in a way that gave the students something to talk about - they were short, and rather than re-expressing their whole paper, they introduced a few key questions.	2	3	9	11		
29	Cambridge	Session 2 and 3 did a great job in setting the scene for the whole seminar, by providing insights on the foundations of SS (section 2) and on key sustainability issue (section 3). They wet my appetite, so to say.	2	3	7			
22	Cambridge	Session 2 nicely summarized the field of sustainability science.	2	5	9			
16	UNAM	The expositions in these sessions was extremely clear, appealing, and made sense to the kind of questions I would like to answer.	2	5	6	9	10	11
5	Cambridge	The flow of the overall design of the book become most visible in these sessions.	1	2	7	9	11	
4	Cambridge	In each of these sessions, I left feeling like I actually knew more than when I walked into the session. They each had definite beginnings, posed particular questions, explained how one might answer these questions, and then ATTEMPTED TO ANSWER THEM. Even when the result was that there is no satisfactory answer, or at least none for the moment, it made the session meaningful.	2	3	4	9	13	

Dislikes

9	UMN	Session 2: ignored alternative ideas and discussion of ethics.	2	4	8		
17	UMN	Too ethereal and induced unproductive debate over semantics	2	4			
42	UMN	Several sessions could be criticized for lack of cohesiveness or technological difficulties. But all of these were part of the experiment, as I see it. I think sessions 1 and 2 could be merged					

Not for distribution or quotation beyond seminar

	to provide room for another topic, since session 2 was the least content-heavy.			
--	---	--	--	--

3. Long-term trends and transitions in nature and society (Speaker: Robert Kates)

Likes

42	UMN	I actually enjoyed all of the sessions. The Kates session, despite some incongruence among the three groups presenting, was a really elegant way to encapsulate the relevant major trends over time. I found the discussion thought-provoking and reflected on this session for weeks afterward.	3	6	11	12		
41	ASU	Sessions 3 and 8 had good discussions and were well facilitated.	3	7	8			
35	Cambridge	the speakers set them up in a way that gave the students something to talk about - they were short, and rather than re-expressing their whole paper, they introduced a few key questions.	2	3	9	11		
33	Princeton	Session 3: Ideas were expansive and free. Between Bob Kates' focus on the potential for a "great transition" and the only developed discussion of consumptive behavior and perceptions of well-being, it hit on some of the biggest, in terms of scope and importance, intellectual challenges in sustainability science.	3	12				
29	Cambridge	Session 2 and 3 did a great job in setting the scene for the whole seminar, by providing insights on the foundations of SS (section 2) and on key sustainability issue (section 3). They wet my appetite, so to say.	2	3	7			
24	Cambridge	Both Bob Kates and Elinor Ostrom were fantastic presenters with through, specific presentations.	3	6	8	9	10	
20	Cambridge	Robert Kates is a great writer and speaker!	3	11	13			
18	Cambridge	It is valuable to nest this broader semester-long discussion in the longer-term trends, and this lecture did this well.	3	9	11			
11	Cambridge	I found Bob Kate's chapter a delight to read - straightforward and interesting. It was also a pleasure to meet the man in person and get to hear a little more of his experience and thoughts.	3	6	9			
10	Cambridge	They seemed the most grounded in practice rather than dealing with academic frameworks, and that's the material that's most interesting/useful to me.	3	11	12			
6	UMN	I thought these sessions were the ones that addressed issues the most informatively and pragmatically. In other words, I thought these were the most content-heavy (as opposed to being unnecessarily philosophical).	3	7	12			
4	Cambridge	In each of these sessions, I left feeling like I actually knew more than when I walked into the session. They each had definite beginnings, posed particular questions, explained how one might answer these questions, and then ATTEMPTED TO ANSWER THEM. Even when the result was that there is no satisfactory answer, or at least none for the moment, it made the session meaningful.	2	3	4	9	13	

Not for distribution or quotation beyond seminar

Dislikes

4. The human-environment system: A conceptual framework (Speaker: B.L. Turner II)

Likes

40	Cambridge	Each of these sessions spoke to my personal interests, which is probably why I enjoyed them the most.	4	9	11			
37	Cambridge	The clarity and novelty of the ideas put forth and discussed in these sessions made them interesting. Besides, I think the first 6 to 7 sessions labour to convey more or less the same conceptual and theoretical underpinnings; that make it a trifle repetitive. The later chapters are therefore new in their own way and stand separate.	4	9	11	12		
30	UNAM	Session 4: It was a useful and central part of what has to be Sustainability.	4	6	8			
25	UNAM	Are the basic foundations for a real vision of human activities to the environment	4	6	8			
4	Cambridge	In each of these sessions, I left feeling like I actually knew more than when I walked into the session. They each had definite beginnings, posed particular questions, explained how one might answer these questions, and then ATTEMPTED TO ANSWER THEM. Even when the result was that there is no satisfactory answer, or at least none for the moment, it made the session meaningful.	2	3	4	9	13	

Dislikes

6	UMN	I thought the two CHES sessions were very light on content and very heavy on obscure philosophical terms/concepts/definitions that have little use in solving problems related to sustainability and didn't serve as good educational tools either.	4	6	8			
9	UMN	Sessions 4 and 8: lack of substance.	2	4	8			
17	UMN	Too ethereal and induced unproductive debate over semantics	2	4				
20	Cambridge	CHES chapter was one of the most confusing ones for me. That made it harder to follow up in the seminar.	4					
23	UMN	I generally didn't think that Billie Turner's presentations were as well prepared as other presenters.	4	6	13			
29	Cambridge	Session 4, because the concepts were kept at a very general and abstract level and for the lack of clarifying examples	4	6				

5. The environmental services that flow from natural capital (Speaker: Steve Carpenter)

Likes

23	UMN	I liked the presentations by Elinor Ostrom and by Steve Carpenter. Additionally, the Natural Capital session (S. Carpenter) was one of the two that I was a student respondent, so I had more invested in it.	5	7	9			
22	Cambridge	Session 5 talks about natural capital and human impacts using concepts and methods that is understandable to the general public.	2	5	9			

Not for distribution or quotation beyond seminar

17	UMN	I thought Steve Carpenter, Lizzie King and Elinor Ostrom had very clear messages that were interesting and not too theoretical.	5	9	10			
16	UNAM	The expositions in these sessions was extremely clear, appealing, and made sense to the kind of questions I would like to answer.	2	5	6	9	10	11
9	UMN	Very substantive presentations.	5	7	9			
8	Cambridge	Sessions 5 & 10 gave some specific examples of research projects in Sustainability Science. I enjoyed this because as an early-stage PhD student, it helped me think through the kinds of research I might conduct myself. Session 10 was only examples though, so it maybe should have been combined with Session 4? Another idea is that the moderator/discussants could perhaps focus on applying the concepts from the speaker to specific examples or case studies, and through this make their main points.	5	7	9	10	11	
2	UMN	Natural capital is an integral part of environmental sustainability, so it was a great presentation on a necessary topic.	5	7	9			

Dislikes

33	Princeton	It was clear that the speaker wasn't aware of the time limits. Also, the talk was derived very directly from the book chapter so didn't add much to my understanding	5				
----	-----------	--	---	--	--	--	--

6. Divergent vs. convergent development models (Speaker: Ivette Perfecto)

Likes

42	UMN	The Perfecto session, while fraught with technological problems, was nevertheless a highlight for me in that I was able to see clearly how the metacommunity/metapopulation framework for thinking about land use could be linked to valuation approaches. The insight that both of these approaches could be enhanced by linking them provided inspiration for new research and scholarship for students at Minnesota and UNAM.	3	6	11	12		
30	UNAM	Session 6: Showed different and important perspectives about sustainability in action, that are polemic and not well understood.	4	6	8			
27	UNAM	I really enjoyed the vast experience of the speakers in their fields and the way they presented the sessions. I think that having a seminar with a variety of experienced speakers from different institutions is crucial for the success of the seminar.	6	9	12			
25	UNAM	Are the basic foundations for a real vision of human activities to the environment	4	6	8			
24	Cambridge	I enjoyed Ivette Perfecto's work and presentation, and was quite disappointed with our audio problems cutting her explanation short!	3	6	8	9	10	
16	UNAM	The expositions in these sessions was extremely clear, appealing, and made sense to the kind of questions I would like to answer.	2	5	6	9	10	11
11	Cambridge	Though it wasn't a traditional class (no book chapter) I quite enjoyed the divergent vs. convergent readings and Ivette's presentation until the technology failed. I especially enjoyed our group discussion afterward. That area within sustainability science is of great interest to me.	3	6	9			

Not for distribution or quotation beyond seminar

Dislikes

4	Cambridge	Each of these sessions disappointed me for more or less the opposite reason outlined above. Particularly for 8 and 10, I had a pretty good idea of the problems I would have liked to pose and solve. Yet in each case, the sessions seemed to orbit around the idea of solving a problem without ever actually addressing them (even King's discussion seemed to back off from answering her research question at the very last minute). The presenters seemed to be universally timid about making open statements. As this is a closed seminar based on material we're not allowed to cite, I would have appreciated researchers to go out on more of a limb, and actually expose their own opinions. Even if this should result in disagreement between authors, it is disagreement we as students should see - the sticky points should not be swept under the rug. Moreover, without some definite statement (or attempt to frame one at the end of the session), I felt like the sessions lacked meaning. We talked about a problem, agreed that it was a problem, and then ended the discussion. This neatly avoids making any headway.	6	8	10
6	UMN	I thought the session on convergent/divergent models was a bit of a tangent, at least where it was placed chronologically. If that session was kept, I would move it later in the course, or perhaps even make it part of the worked examples topic.	4	6	8
8	Cambridge	Session 6 -- I actually enjoyed this session quite a bit, but was a bit confused by the framework. I'm not a natural scientist and had not heard of this dichotomy before (divergent vs. convergent) and it seemed like there was a deeper difference between the two views related to more general differences in values, but I didn't quite get what that was...	6	8	
23	UMN	The Ivette Perfecto session had numerous technological problems that distracted from its content, plus it felt a bit disjointed and astray from the general flow of the course.	4	6	13
28	Cambridge	It was such an interesting session but at least Cambridge missed too much due to audio problems.	6		
29	Cambridge	Session 6, because I failed to grasp its connections with previous and subsequent sessions. In my view, there was a change of "pace" in this session because the topic was perhaps too specific. This is reflected also by the fact that this session was not attached to a book chapter.	4	6	
34	Cambridge	Session 6 interrupted the lecturing part of Perfecto and the choice of not accommodating for her to come back and finish was probably not beneficial to the overall following part.	6		

7. Human well-being, natural capital and sustainable development (Speaker: Stephen Polasky)

Likes

41	ASU	I enjoyed session 7 because the presentation clarified many of the concepts presented in Dasgupta's chapter.	3	7	8			
29	Cambridge	Session 7 provided perhaps the most intellectually engaging aspect of the seminar, together with a lot of food for thought related to the operationalisation of sustainability.	2	3	7			
28	Cambridge	Session 7 & 12: Professor Polasky was the first person to explain any economic topic in a way that I had no trouble understanding.	7	9	12			
23	UMN	Steve Polasky's work (and his talk) is very well aligned with my own, plus I think he is a fantastic presenter.	5	7	9			
9	UMN	Very substantive presentations.	5	7	9			
8	Cambridge	Session 7 was good because it helped me get a handle on what our 'objective function' as sustainability scientists might actually look	5	7	9	10	11	

Not for distribution or quotation beyond seminar

		like. I was a bit put off by the idea of actually trying to calculate shadow prices from existing data, however, as it assumes that our current market spending accurately reflects what values we will and should place on different aspects of human well-being. [Note that some things are 'cheap' not because they contribute less to human well-being or are valued less by humans, but simply because they cost less to produce or are not (yet) scarce relative to other dimensions that are traded on the market.]						
6	UMN	I thought these sessions were the ones that addressed issues the most informatively and pragmatically. In other words, I thought these were the most content-heavy (as opposed to being unnecessarily philosophical).	3	7	12			
5	Cambridge	The flow of the overall design of the book become most visible in these sessions.	1	2	7	9	11	
2	UMN	Natural capital is an integral part of environmental sustainability, so it was a great presentation on a necessary topic. I learned a lot from the well-being discussion, including the idea of shadow prices that led to a discussion on policy implementation.	5	7	9			

Dislikes

14	Cambridge	I would have preferred to hear about Dasgupta's models and chapters from Dasgupta himself, instead of from Steve. However, I understand that there were scheduling problems, which is absolutely understandable.					7		
37	Cambridge	Session 7 required more elaboration and hence, appeared inadequate. Session 12 could have come together with this session since the metric is mostly founded on the neo-classical economics paradigm of rational human choice and behaviour and even, institutional impact hypothesized to be rational.					7	8	13

8. Emergent properties of coupled human-environment systems (Speaker: B.L. Turner II)

Likes

41	ASU	Sessions 3 and 8 had good discussions and were well facilitated.	3	7	8			
30	UNAM	Session 8: Gave us knowledge about elements difficult to achieve in sustainability science given the complexity of the CHES.	4	6	8			
25	UNAM	Are the basic foundations for a real vision of human activities to the environment	4	6	8			
24	Cambridge	I also enjoyed Billie Turner's long example of CHES using the mayan case (Session 8).	3	6	9			

Not for distribution or quotation beyond seminar

Dislikes

4	Cambridge	Each of these sessions disappointed me for more or less the opposite reason outlined above. Particularly for 8 and 10, I had a pretty good idea of the problems I would have liked to pose and solve. Yet in each case, the sessions seemed to orbit around the idea of solving a problem without ever actually addressing them (even King's discussion seemed to back off from answering her research question at the very last minute). The presenters seemed to be universally timid about making open statements. As this is a closed seminar based on material we're not allowed to cite, I would have appreciated researchers to go out on more of a limb, and actually expose their own opinions. Even if this should result in disagreement between authors, it is disagreement we as students should see - the sticky points should not be swept under the rug. Moreover, without some definite statement (or attempt to frame one at the end of the session), I felt like the sessions lacked meaning. We talked about a problem, agreed that it was a problem, and then ended the discussion. This neatly avoids making any headway.	6	8	10
6	UMN	I thought the two CHES sessions were very light on content and very heavy on obscure philosophical terms/concepts/definitions that have little use in solving problems related to sustainability and didn't serve as good educational tools either.	4	6	8
8	Cambridge	Session 8 - I think starting with a more general discussion of emergence and ways to deal with it and then identifying other aspects of it, aside from vulnerability and resilience, would be helpful, as well as some specific examples.	6	8	
9	UMN	Sessions 4 and 8: lack of substance.	2	4	8
37	Cambridge	We know that there are taken-for-granted institutions based on mental models and values and belief systems that are not efficiency seeking but legitimacy seeking and quite often, not rationally founded.	7	8	13
40	Cambridge	The speaker seemed unprepared, which for this class with over 100 people participating, seems inappropriate at best.	8		

9. Institutions for managing human-environment systems (Speaker: Elinor Ostrom)

Likes

40	Cambridge	Session 9 was a bit of an outlier since she essentially presented on her own research and less on how it ties into the book, but it was also one of the stronger talks, probably for that reason.	4	9	11			
37	Cambridge	The clarity and novelty of the ideas put forth and discussed in these sessions made them interesting. Besides, I think the first 6 to 7 sessions labour to convey more or less the same conceptual and theoretical underpinnings; that make it a trifle repetitive. The later chapters are therefore new in their own way and stand separate.	4	9	11	12		
35	Cambridge	the speakers set them up in a way that gave the students something to talk about - they were short, and rather than re-expressing their whole paper, they introduced a few key questions.	2	3	9	11		
34	Cambridge	Session 9 - it gave a clear understanding of the relevant institutional factors and questions for Sustainability Science, a dimension that is not always sufficiently considered in the S&T arena.	9	11	12			
28	Cambridge	Session 9: Professor Ostrom is just an amazing person and I enjoyed her presentation personally and academically.	7	9	12			

Not for distribution or quotation beyond seminar

27	UNAM	I really enjoyed the vast experience of the speakers in their fields and the way they presented the sessions. I think that having a seminar with a variety of experienced speakers from different institutions is crucial for the success of the seminar.	6	9	12			
26	Princeton	Being from an engineering background, Elinor Ostrom's social science viewpoint really opened my eyes to how important human motivation, trust, and relationships are when dealing with CHESs.	9	11	13			
24	Cambridge	Both Bob Kates and Elinor Ostrom were fantastic presenters with through, specific presentations.	3	6	8	9	10	
23	UMN	I liked the presentations by Elinor Ostrom and by Steve Carpenter.	5	7	9			
22	Cambridge	Session 9 identifies how can we manage the H-E systems to improve sustainability, although context dependent.	2	5	9			
14	Cambridge	These sessions were my personal favorites because the subject matter was most aligned to my particular academic interests.	9	11				
18	Cambridge	I think there was too little consideration overall of how decisions are actually made and governance occurs on the path to more sustainable societies. This lecture was obviously an exception!	3	9	11			
17	UMN	I thought Steve Carpenter, Lizzie King and Elinor Ostrom had very clear messages that were interesting and not too theoretical.	5	9	10			
16	UNAM	The expositions in these sessions was extremely clear, appealing, and made sense to the kind of questions I would like to answer.	2	5	6	9	10	11
11	Cambridge	I really enjoyed Elinor Ostrom's chapter, and her presentation. I also enjoyed Partha Dasgupta's preface (or appendix) although I actually found them somewhat incongruous to read back to back. Perhaps that is just my own experience on the day I read them, but I have heard some similar sentiments from other classmates. I also heard that Lin Ostrom has previously given a very similar talk in a different context, but it was new to me and I thoroughly enjoyed it.	3	6	9			
9	UMN	Very substantive presentations.	5	7	9			
8	Cambridge	I greatly enjoyed Session 9 partly because this is related to my field of research but also because it raised some questions about the logic employed in Session 7. It also pointed to situations where both environmental protection and human well-being can be improved and helped us begin thinking about the factors that allow that to happen.	5	7	9	10	11	
7	Cambridge	It was fantastic to have Lin present and she did a great job of distilling her work in a presentation that was really fun to watch. I also thought she did a very nice job of engaging with the student commentators and taking everyone's questions seriously.	9	10	12			
2	UMN	Elinor Ostrom was a great speaker and I enjoyed her thoughtful responses to questions.	5	7	9			
5	Cambridge	The flow of the overall design of the book become most visible in these sessions.	1	2	7	9	11	

Not for distribution or quotation beyond seminar

4	Cambridge	In each of these sessions, I left feeling like I actually knew more than when I walked into the session. They each had definite beginnings, posed particular questions, explained how one might answer these questions, and then ATTEMPTED TO ANSWER THEM. Even when the result was that there is no satisfactory answer, or at least none for the moment, it made the session meaningful.	2	3	4	9	13	
---	-----------	--	---	---	---	---	----	--

Dislikes

10. Worked examples of concepts in human- environment systems (Speaker: Elizabeth King)

Likes

24	Cambridge	I also enjoyed Elizabeth King presenting her research	3	6	8	9	10	
17	UMN	I thought Steve Carpenter, Lizzie King and Elinor Ostrom had very clear messages that were interesting and not too theoretical.	5	9	10			
16	UNAM	The expositions in these sessions was extremely clear, appealing, and made sense to the kind of questions I would like to answer.	2	5	6	9	10	11
8	Cambridge	Sessions 5 & 10 gave some specific examples of research projects in Sustainability Science. I enjoyed this because as an early-stage PhD student, it helped me think through the kinds of research I might conduct myself. Session 10 was only examples though, so it maybe should have been combined with Session 4? Another idea is that the moderator/discussants could perhaps focus on applying the concepts from the speaker to specific examples or case studies, and through this make their main points.	5	7	9	10	11	
7	Cambridge	Lizzy King's subject material was a lot of fun.	9	10	12			

Dislikes

4	Cambridge	Each of these sessions disappointed me for more or less the opposite reason outlined above. Particularly for 8 and 10, I had a pretty good idea of the problems I would have liked to pose and solve. Yet in each case, the sessions seemed to orbit around the idea of solving a problem without ever actually addressing them (even King's discussion seemed to back off from answering her research question at the very last minute). The presenters seemed to be universally timid about making open statements. As this is a closed seminar based on material we're not allowed to cite, I would have appreciated researchers to go out on more of a limb, and actually expose their own opinions. Even if this should result in disagreement between authors, it is disagreement we as students should see - the sticky points should not be swept under the rug. Moreover, without some definite statement (or attempt to frame one at the end of the session), I felt like the sessions lacked meaning. We talked about a problem, agreed that it was a problem, and then ended the discussion. This neatly avoids making any headway.				6	8	10
---	-----------	---	--	--	--	---	---	----

Not for distribution or quotation beyond seminar

21	Cambridge	Throughout the entire course I found it difficult to transform the theory we discussed into ideal examples of studies/interventions that fitted what we might call sustainability science projects. I thought the book could provide this in some way...a chapter, or maybe even a box, that listed a number of fields from which readers might be from, and a few studies that might be called good SS projects. That way as a economist, water expert or biologist the reader would have some link to a "home-field" example of sustainability science. I understood that the book is meant to transcend disciplinary boundaries - but I think it would be valuable to have some starting point in a readers home field through which they can see an ideal study, and bridge the gap between what they previously did and SS. Session 10 didn't do this for me.	10		
22	Cambridge	A little too specific and narrowed perspective.	10		
41	ASU	Session 10 was problematic because the examples provided of human-environment systems did not clearly demonstrate the multiple connections and feedbacks between both systems. It was more focused on stakeholder engagement and the environment as a driver for social problems, thus it just did not fit the title of the session. Also the issue of equity (current and future generations" was addressed only slightly, which i think left many unsatisfied.	10	13	

11. Linking Knowledge with Action for Sustainability (Speaker: Bill Clark)

Likes

42	UMN	The Clark session 11 was very well received at Minnesota for its insightfulness.	3	6	11	12		
40	Cambridge	Session 11, for me, got to the heart of the material. It might have been nice to have it earlier, and since we saw a similar presentation in our own seminar in the beginning of the semester, I'm sure the material could be easily understood in the beginning of the semester.	4	9	11			
37	Cambridge	The clarity and novelty of the ideas put forth and discussed in these sessions made them interesting. Besides, I think the first 6 to 7 sessions labour to convey more or less the same conceptual and theoretical underpinnings; that make it a trifle repetitive. The later chapters are therefore new in their own way and stand separate.	4	9	11	12		
35	Cambridge	the speakers set them up in a way that gave the students something to talk about - they were short, and rather than re-expressing their whole paper, they introduced a few key questions.	2	3	9	11		
34	Cambridge	Session 11 - very interesting for the chosen conceptual framework used for tackling this very strategic topic	9	11	12			
20	Cambridge	Bill Clark did a very concise and clear talk	3	11	13			
14	Cambridge	These sessions were my personal favorites because the subject matter was most aligned to my particular academic interests.	9	11				
18	Cambridge	An important contribution in terms of governance for sustainability. There were some really important themes here, including the focus on what makes knowledge credible and useful to decision-makers. I do, however, think that there could have been more about the political challenges and nuances along the path from knowledge to action.	3	9	11			
16	UNAM	The expositions in these sessions was extremely clear, appealing, and made sense to the kind of questions I would like	2	5	6	9	10	11

Not for distribution or quotation beyond seminar

		to answer.						
10	Cambridge	They seemed the most grounded in practice rather than dealing with academic frameworks, and that's the material that's most interesting/useful to me.	3	11	12			
8	Cambridge	I liked Session 11 because I think the ideas presented there make both for better research and for greater likelihood of implementation.	5	7	9	10	11	
5	Cambridge	The flow of the overall design of the book become most visible in these sessions.	1	2	7	9	11	

Dislikes

12. Metrics for sustainable development (Speaker: Steve Polasky)

Likes

42	UMN	The Polasky session, was thoughtful and well-integrated among the groups. While it gave real depth to the mechanics of what would be needed to measure shadow prices necessary for the Dasgupta model it also provided realism as to the challenges. The UNAM counter-approach provided a multi-dimensional alternative. Very illuminating and thought-provoking session.	3	6	11	12		
37	Cambridge	The clarity and novelty of the ideas put forth and discussed in these sessions made them interesting. Besides, I think the first 6 to 7 sessions labour to convey more or less the same conceptual and theoretical underpinnings; that make it a trifle repetitive. The later chapters are therefore new in their own way and stand separate.	4	9	11	12		
34	Cambridge	Session 12 - I enjoyed the broad discussion of different ways to build and justify metrics systems - it gave me a sense of how much we are still far from the goal.	9	11	12			
33	Princeton	Session 12: The fact that inclusive wealth is unoperationalizable seemed like an elephant in the room for a long time. It was good to go back to recognize and discuss exactly why it's nearly impossible to measure. The student presentation was really fascinating.	3	12				
28	Cambridge	Session 7 & 12: Professor Polasky was the first person to explain any economic topic in a way that I had no trouble understanding.	7	9	12			
27	UNAM	I really enjoyed the vast experience of the speakers in their fields and the way they presented the sessions. I think that having a seminar with a variety of experienced speakers from different institutions is crucial for the success of the seminar.	6	9	12			
10	Cambridge	They seemed the most grounded in practice rather than dealing with academic frameworks, and that's the material that's most interesting/useful to me.	3	11	12			
7	Cambridge	I think that in the Cambridge group's discussion post session 12 on metrics, we finally came to some sort of consensus on the usefulness of the Dasgupta model and where it breaks down. Bill's comments about policy makers hesitance to aggregate metrics and the idea that well being is a useful conceptual tool but not yet for making any kind of prediction was important. I was excited about the class after this session but mostly because I felt I had come to clarity and peace with the ideas presented on well-being over the course of the semester.	9	10	12			

Not for distribution or quotation beyond seminar

6	UMN	I thought these sessions were the ones that addressed issues the most informatively and pragmatically. In other words, I thought these were the most content-heavy (as opposed to being unnecessarily philosophical).	3	7	12			
---	-----	---	---	---	----	--	--	--

Dislikes

11	Cambridge	I didn't love session 12 even though I quite enjoyed the readings. I think I found the student presentation underwhelming, or maybe I just disagreed with some of the main points. There seemed to be a focus on a model that was to be presented in an optional seminar on 12/3. I wasn't able to make it to that, and so found myself a bit lost.						12
18	Cambridge	It is not really fair to evaluate negatively, as it is really a personal predilection, but I did not find this metric at all credible. I'm not sure why the book is focusing on the herculean (one could say utterly impossible) task of constructing a single metric for something as complex and multidimensional as sustainability. I was genuinely relieved that the respondents introduced some of the indicator sets as an alternative.						12
25	UNAM	Is an interesting topic, no doubt, but as we discussed at the time, in real life you cannot put a price on all ecosystem services, is not the path of sustainability.						12
26	Princeton	Steve showed us that inclusive wealth is not a great perfect but what does he suggest to fix it? Where do we go from here?						12

13. Grand challenges and core questions of sustainability science (Speaker: Bill Clark)

Likes

20	Cambridge	It was interesting to hear everybody's point of view in Session 13	3	11	13			
4	Cambridge	In each of these sessions, I left feeling like I actually knew more than when I walked into the session. They each had definite beginnings, posed particular questions, explained how one might answer these questions, and then ATTEMPTED TO ANSWER THEM. Even when the result was that there is no satisfactory answer, or at least none for the moment, it made the session meaningful.	2	3	4	9	13	

Dislikes

2	UMN	There was no way to treat each topic with the attention deserved, so the entire session seemed rushed. (It ran into a common problem: too much to do, not enough time)						13
7	Cambridge	I don't think session 13 was done very well. I think it would have been more engaging if Bill had presented on all of the topics students posted and not jumped around from student to student. With the bad technology I get lost jumping around and I prefer to read the comments than hear them over the buzz of the remote microphone.						13
23	UMN	The final session on core questions was a bit difficult to engage with due to not having a central focus and many of the short student presentations here were difficult to understand.						4 6 13
30	UNAM	To know the Core questions and challenges is central in science, but the session lacked of time as well as its preparation. Besides, communication was very difficult since the time we sent the core questions. I think it was bad organized.						13
37	Cambridge	We know that there are taken-for-granted institutions based on mental models and values and belief systems that are not efficiency seeking but legitimacy seeking and quite often,						7 8 13

Not for distribution or quotation beyond seminar

		not rationally founded.			
41	ASU	Session 13 was problematic since we left the session with no clear summary of what are core questions were.	10	13	