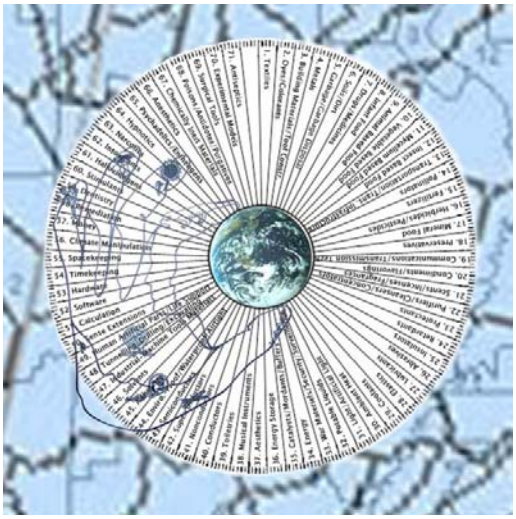
391: TECHNOLOGY ASSESSMENT

Department of Technology and Society – SUNY Korea

Spring 2020, Draft Syllabus



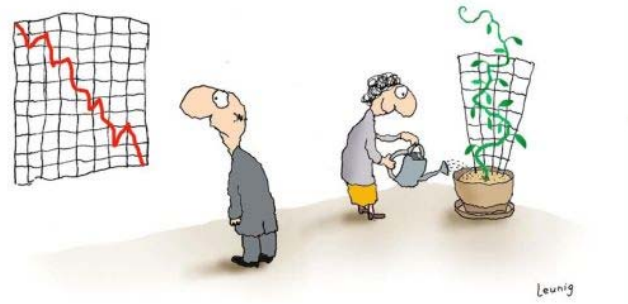
"[The rapid development of science and technology]...is now also being recognized as a source of danger for our societies because of over-hasty transformations and unforeseen negative side effects. There is broad agreement that scientific and technological capacity will be a crucial factor in our common efforts to bring acceptable material standards of living to all people. But are the present large-scale technologies really furthering this aim? What alternative choices exist?....A less naive approach towards the role of science and technology in the promotion of development is emerging. This holds for rich and poor countries alike. An international debate that has been going on for several years has stressed the importance of determined efforts to analyze and "create" the future. The present tendency to know more and more about less and less creates problems for society as a whole; the era of extreme specialization must come to an end."…. "International development in science and technology has been dominated by heavy military and commercial [supply-side] interests. Hence, it is not surprising that most future studies produced so far have also been sponsored by military establishments and by the world's major multinational corporations. Such studies should be the concern of all countries. Critical awareness is needed, as these studies may be based on scales of value that are not democratically acceptable. We must avoid any "colonizing of the future" by powerful interest groups, national or international. One main idea behind the report is the need for public participation in the work on future studies. We must always devote much energy to making complex problems commonly understandable. Future studies and the discussion about different futures must not be left to a new breed of specialists or to an elite who claim to know what is best for everybody. The democratic control of this work must never weaken, and public participation in vital long-range decisions must be safeguarded and deepened."
—Mrs. Alva Myrdal, Cabinet Minister, "To Choose a Future: A Basis for Discussion and Deliberations on Future Studies in Sweden" (her introduction to Resources Society and the Future: A Report Prepared for the Swedish Secretariat for Futures Studies (1972), trans., Roger C. Tanner (1980) [She received the Nobel Peace Prize, 1982]

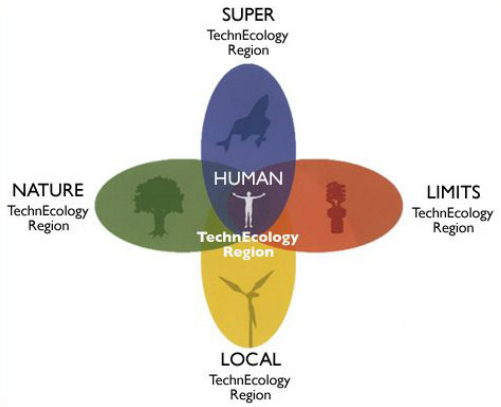
"Conceptual models and practice have, since the 1970s, increasingly highlighted how disasters are manifestations of unresolved development problems and outcome-based indicators of skewed, unsustainable development processes." —"The Future of Disaster Risk Management: Draft synthesis document, meeting notes, background papers and additional materials." From A Scoping Meeting for GAR 2015; FLACSO

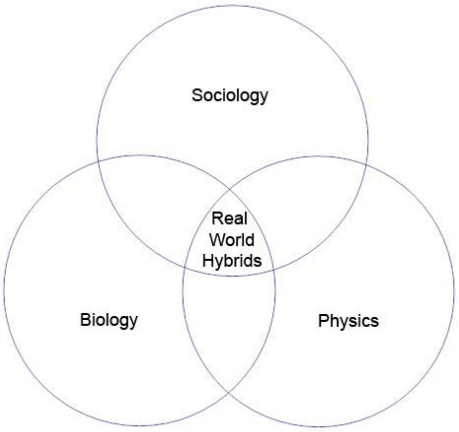
(Latin American Social Science Faculty) and UNISDR (United Nations Office for Disaster Risk Reduction), San Jose, Costa Rica.18th and 19th of April 2013, p. 8 http://www.ilankelman.org/miscellany/scoping.pdf

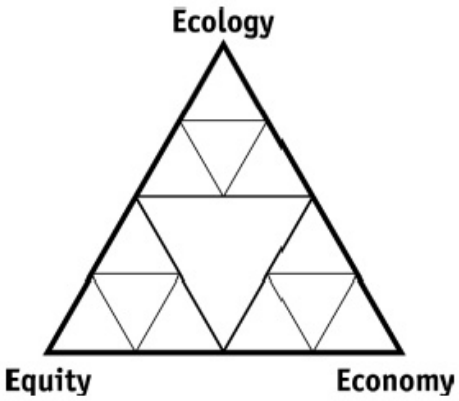
"We've arranged a global civilization in which most crucial elements profoundly depend on science and technology [and their interactions with nature]. We have also arranged things so that almost no one understands science and technology [and their interactions with nature]. This is a prescription for disaster. We might get away with it for a while, but sooner or later this combustible mixture of ignorance and power [and environmental, health, and economic externalities] is going to blow up in our faces."
— Carl Sagan, The Demon-Haunted World: Science as a Candle in the Dark

"Our goal is a delightfully diverse, safe, healthy and just world,
with clean air, clean water, soil and power -- economically, equitably, ecologically and elegantly enjoyed, period. What don't you like about this? Which part of this don't you like?"
—William McDonough, Eco-Architect,
https://www.ted.com/talks/william_mcdonough_on_cradle_to_cradle_design/transcript?language=en
https://www.ted.com/talks/william_mcdonough_on_cradle_to_cradle_design/transcript?language=ko(Korean ver.)









[triangle diagram from: "Fractal Ecology: A Way to Review Technological Impacts for Optimality from "*Introduction to the Cradle to Cradle Design(SM) Framework,"v 7.02(2002)* http://www.chinauscenter.org/attachments/0000/0001/CradleDesign.pdf

Time: Tuesdays and Thursdays, 10:30 a.m. to 11:50 a.m.
Place: B105
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Prerequisites:

PHY 132/134 or CHE 132 or BIO 201 or 202 or 203; U3 or U4
MAT 127 or 132 or 142 or 171 or AMS 161
DEC: H
SBC: STAS

Course Summary:

Technology assessment estimates the effect of new products and processes on the operations of a firm, other firms, society, and the environment. Technology assessment is closely associated with disaster risk assessment, particularly since natural disasters and technological accidents can be coupled together. Particularly in technological assessment or in its coupled disasters it is important to estimate issues of changed equity: how changes may impinge upon or create a crisis more regularly among those already most vulnerable, marginal, or poor.

Six Themes:

First, the course gives you a historical background to think about the interaction of science and technology and how risky infrastructures of socio-technological systems are a background to our 'modern' lives. **Second**, the course gives you a vocabulary to think about eleven very different ideal social goals for the future of technologies and materials, and **third**, we review three different kinds of 'fixes' possible for problems that different actors prefer to address or to repress (educational, technological, and structural). **Fourth**, after these introductions, the course teaches the methods used in creating well-organized technological assessments of impacts of different developmental choices through paper topics. The topics that the student wants to research frame the course, toward the goals of making more informed and thus better and less risky choices for our future whether in materials, technology/organization, environmental impact, or social impact. Given the prerequisites, the course is interdisciplinary: we gain expertise in thinking about real world cases of the interactions of the social, biological/ecological, and physical/chemical issues in our world. **Fifth**, I give you more theoretical vocabulary to conceptualize how (un)separated areas of social, biological, and physical science interrelate in 'infrastructures' in society. Infrastructures are a fresh perspective in the past decade or so. In the past, very few specialized academic disciplines could discuss this real world of infrastructures in our lives instead of just teach to their specializations (such as, only talking about biology in phenomena, or only talking about materials science or chemistry/physics in phenomena, or only talking about social science in phenomena). The real world is comprised of many infrastructures that are simultaneously social, biological, and physical in their invention and their impacts. Therefore, technological assessment requires holistic study of socio-technological impacts beyond disciplinary boundaries. **Sixth**, in summary, this course gives you a chance to be creative in class, to think about the (different?) future you want and to critique the world—whether the material world, the technological world, the social organizational world, or chosen developmental models in general. You learn what your values are in this class. You learn what kinds of future you prefer as you think about which future materials and technologies interest you—and by noting what you dislike about present materials and technology in terms of their environmental or social impacts. Plus, you learn how your views and values may be different than other students on both points.

Curricular Goals:

To summarize **the three main curricular goals or pillars** of the course:

[1] The first goal is to understand basic historical trends that got us to this present of massively risky infrastructures that regularly fail—slowly, quickly and/or catastrophically. They fail whether by human causes or by natural causes interacting with human causes. In short, as **we start to live regularly in the shadow or maze of larger urban-infrastructural arrangements in the past 150 years, we become embedded and 'stuck' within them—like angry bees in a badly designed leaking honeycomb that are mad at eating and breathing increasingly toxic honey**. We are very dependent upon infrastructures in our lives. We will think about the infrastructures of water, food, transportation, communication, garbage service/recycling, energy, refining, agriculture, processing, medical care, biotechnology, pollution remediation, etc.). They have daily interactions and daily impact upon us.

[2] The second goal is to introduce students to the scientific, cultural, and political aspects of various 'futurist scenario debates'—where we want to go optimally in the future as an ideal, technologically speaking. Since the middle of the 20th century, a declining trust exists in state, scientific, and corporate institutional choices because these institutions have created growing risk in our lives that are economic/social, technological, and health/environmental. Technology assessment as an institutionalized critical practice originally developed through critical social movements of protest—and later, through the same previously untrusted institutions of states/militaries, scientists, corporations attempting to re-legitimate themselves in the minds of others by showing a desire to address risky infrastructures of the past that they authorized and created once with less awareness of their long-term unintended, indirect, or delayed implications. Out of this critical social movement, technology assessment came into being and a 'futures debate' of which ideal future we want that is the basis of the criticism developed as well in this. This futures debate focuses on different visions or scenarios of desired futures and desired social purposes of technology, each contending for recruits for which one will be our collective future. In these very different future goals for technology, people make very different choices of materials, technologies, socio-technological organizations, and infrastructures because they have different values on what are their ideals for technology and very different ideas of what makes a scientifically informed decision making to make our lives better, our technologies better, and our ecologies better.

[3] The third goal of the course follows from the second: what are the best impact assessment methods? This means: how do you convince others that your criticism is valid and your future goals are sound? How do you document risk/impact assessment? What are good methods or data indicators to use in assessment to demonstrate empirical information about present bad choices or about future risky choices? These might be framed as *scenarios* about the implications of certain choices. These might be framed as *suggestions for future policy* improvement and mitigation of vulnerability. These might be framed as *some future research knowledge or monitoring that is required* to answer these questions. These impact assessment methods and goals have grown into a wide professional field: there is:

- technological impact assessment (TIA),
- medical technology assessment (MTA),
- environmental impact assessment (EIA),

- disaster impact assessment (DIA), and
- social impact assessment (SIA). Our course additionally discusses
- material science impact assessment (MA): impact assessment of choosing certain materials over others for the same social uses.

Pedagogy

For pedagogy, this class is a combination of three kinds of learning: **lecture, useful technical/ methodological learning in this field, and 'flipped classroom' learning**.

[1] **Lectures** by the professor begin discussion of different sections of the course. There is the introduction about the history of the interaction of science and technology, and the development of our 'modern life' increasingly lived among massive and convenient infrastructures yet sometimes these are catastrophically risky infrastructures. There is a discussion of how that led to the development of futures studies and social movements of alternative technological futures that involved critiques of the 'super tech' culture of technology. There are discussion introducing all other sections, on material science assessment (in this class known as 'MA'), on technological/organizational assessment (TA), on environmental impact assessment (EIA), on disaster risk assessment (DIA) and mitigation in general that is in all the above, and on the capstone group assignment in social impact assessment (SIA).

[2] There is an overview of various **methods or techniques** for doing MA, TA, EIA, and SIA which students practice in an ongoing growing way to expand their competence. Thus the course serves as an overview of various different groups and purposes for impact assessment.

[3] The **'flipped classroom'** aspect of the course means students will be doing their own exciting research and presentations on MA, TA, EIA, and SIA based only on what interests them within each of these categories. For extra credit, they present short talks about their draft papers as individuals or as teams. The only required presentations are the group SIA at the end of the course.

Grading Evaluation

Grading evaluation will be based on the following categories and percentages of semester grade.

I.	Attendance/Participation	total:	20%
II.	Individual/Group Assignments	total:	80%
a.	One Long Documentary Film Discussion/Review	5%	
b.	One MA (Material Assessment)	5%	
c.	One TA (Technological/Organizational Assessment)	15%	
d.	One EIA (Environmental Impact Assessment)	15%	
e.	One SIA (Social Impact Assessment) (group project involving all the above (a,c,d plus e), working as a team)	40%	

There is no mid-term. There is no final exam.

Projects move from smaller issues to larger issues of assessment, by analyzing and tracking material choice contexts and impacts, to later in other projects, analyzing the interaction of how choices of

technological, organizational and material choices come together; to later in other projects, analyzing external environmental impacts of such technological and material choices; to the capstone project that includes it all: analyzing the wider social impacts of all the above for the group project. Projects move from analyzing and tracking material choice contexts and impacts, to analyzing the *interaction* of how choices of technological *and* material choices come together, to analyzing external environmental impacts *of such* technological and material choices, to analyzing the wider social impacts of all the above for the group project. Later, there will be more information given about each assignment and how they have been introduced in this nested pattern to build your competence throughout the course in this way. This chart demonstrates what is meant:

Chart of All Papers/Presentations

In rows, growing level of expertise in handling holistic issues together with a vocabulary about them	Four Projects			
1. MA	Individual MA (5%) ← retrospective			
2. TA/TIA	(MA)	Individual TIA (15%) ← retrospective		
3. EIA	(MA)	(TIA)	Individual EIA (15%) ← or → retrospective or prospective	
4. SIA	(MA)	(TIA)	(EIA)	Group SIA (40%) → only prospective only

Useful Database Links for the Four Projects, at a Glance:

[1] Individual MA Assignment: [a.k.a., SLCA (Social Life Cycle Assessment) of materials (in Muthu, ed. reading)];
register your topic by Sept. 29 for full participation credit: (MA paper due Oct. 10)
https://goo.gl/forms/5zIf2S8QxJnUEcMs2
"First come, first serve" on topic choices; avoid overlapping topics.

[2] Individual TIA Assignment: (these can be DIA as well; Disaster Impact Assessments)
register your topic by Oct. 17 for full participation credit: (TIA paper due Oct. 22)
https://goo.gl/forms/scaHWCNSbPgLkBZi1
"First come, first serve" on topic choices; avoid overlapping topics.

[3] Individual EIA Assignment: (these can be DIA as well; Disaster Impact Assessments)
This can be retrospective or prospective (about potential future changes and their effects)
Register your topic by Nov. 5 for full participation credit; (EIA paper due Nov. 19)
https://goo.gl/forms/ZEDpG60mlCB81d7z2
"First come, first serve" on topic choices; avoid overlapping topics.

[4] Group SIA Assignment (Social Impact Assessment (SIA)) group project); Now that you have reviewed many different kinds of other assessments, it's time to craft your own future-driven analysis of technology, policy, or technology policy as a group, based on what you have learned.
Register your group and topic by Nov. 26 for full participation credit; (SIA due by Dec. 12).
https://goo.gl/forms/CP5WqHE7KcbZtjDj2
"First come, first serve" on topic choices; avoid overlapping topics.

Course Requirements: **Attendance/Participation, Assignments, and Final Project Described**

I. Attendance/Participation: Students are expected to attend class. For participation, students are expected to be aware of current events in the world of engineering and information technology, and will be called upon to contribute items of current interest.

II. A. Individual Assignments: Over the course of the whole semester, for assignments in each of the 'flipped classroom' sessions,

[1] students as individuals find some topic of interest first in a material assessment (why was a certain material chosen, and what are the maligned alternatives?; explore the whole infrastructure that is involved in this material flow), then a technological assessment (which innately involves a material assessment in asking the same questions about technology, next), and then an environmental impact assessment (which innately involves both a material and technological assessment when asking the same questions about environmental impact, next) and then a group project for the social impact assessment (that includes all themes above, plus others related to addressing your case's issues of impact of such a development on equity, vulnerability, inclusion, culture, and political process). In this way, students build their competence in the nested, growing depth of the assignments' analysis of impact. First is the material assessment, then the technological assessment (that unavoidably talks about the material issues), then the environmental impact assessment (that unavoidably talks about the environment, human biology/health, and the choices of material and technology, etc.), and then the social impact assessment (that unavoidably talks about all the above, though additionally talks about issues of equity, inequality, and vulnerability and sustainability or cultural sensitivity to a regional culture.) Individual students will prepare one presentation per thematic session, for a total of four short papers with optional presentations. This gives the individual student a building competence in ever more detailed assessments and nuances of cases.

[2] Plus, individual students have to choose three different countries over the course of the semester for their three individual assignments (MA, TIA, EIA). However, there is an 'appeal process' to this rule, if you want, where I allow a maximum of two assignments to be about one country out of the three individual assignments. Therefore, just contact me and explain if you think you have a special rationale why you think two of your individual assignments should be allowed to be from the same country, and thus why the 'three country rule' should be waived for you.

[3] Individual students may choose their home countries for only one section. This is to do justice to risk as a global phenomenonand technology assessment as now a widespread international practice. This fixes comparisons in the mind of the student. This encourages them to learn from the assessments in other countries and from other students, for wider comparative inspiration from others ideas and actions.

II. B. Final Group Project: For the final project, this logic is reversed in two ways.

[1] Instead of an individual project, it is a group project.

[2] Second, instead of presenting only about one assessment in one country, the group works together to **craft detailed social impact assessment or a disaster management impact assessment without a country limitation,** that includes **five sections** at least. These five sections will be (1) a material review/assessment, (2) a technological assessment, (3) an environmental impact assessment, and (4)

a social impact assessment (that has at least three parts: (4a) cultural sensitiveness to a region, (4b) degree of representativeness of the process of development, (4c) the issues of equity or inequity that the development is causing, would cause, or would alleviate), and (5) a fifth section on recommendations for improvement in all areas. As I said, this can be **a social impact assessment** or **a good review of any country's past or present disaster risk situation, resulting mitigation regime instituted, and/or your improvements suggested to that mitigation regime.**

[3] You will use at least five sources of data and methods that you choose as a group. You may coordinate and divide your research in all five areas mentioned above.

[4] To divide work, student groups for the final project may have a minimum of two people (i.e., two people assign themselves to do the full SIA (as described above), and they collate information in a presentation); or a group project can have a maximum of four people (four people assign themselves to review each section mentioned above in the SIA and then they collate information in a presentation.).

[5] No two groups may do the same topic in the same country without my approval, and it is fine for different groups to choose the same country, as long as the topic itself avoids overlap. For instance, only one group could review the Sewol ship disaster for instance, though multiple groups could do the same country without a problem: like one group reviewing Sewol and another group reviewing a South Korean nuclear accident or another group reviewing the national power outage a few years ago and what mitigation regime was created to avoid it in the future with your suggestions for improvement. I encourage students to think about choosing their group project country and topic early to get the topic and country you want as a group. **I will not accept reservations for topics and countries until after the middle of the semester**.

[6] If you want to do an individual final project, you should see me and explain why you prefer this, in order to get my approval. However, in the real world, there is nothing called an individual technological or social impact assessment. MA/TA/EIA/DIA/SIA typically are always group projects in the world, comprised of different people with different intellectual backgrounds and strengths of analysis in different areas.

[7] For timelines and deadlines, all final project groups and country topics have to be approved by me at least four weeks before the end of the semester. [7a] This is so I am assured that no one is overlapping on the same topics in the same country, and [7b] so I am assured that the group dynamics and the topic are well matched for completing such a final project. [7c] This earlier date of formulating the subgroups for the final project means you can get 'double use' of later flipped classroom experiences if you plan ahead in your group. For example, if a group chooses some country's hydroelectric dam future development project, each of the group's individuals might choose to research about that country's dam issues in the earlier EIA assignment in one of their individual assignments, and so be done with that section already for the later group project as well. I want to help you have the time to think and to research your choice of country well in advance. I want to help you be aware of useful comparisons about different countries and different impact assessments from other students—in their presentations or their discussions of ideas in class.

Note on Grading Procedures of Attendance:

1. Attendance is required, and checked each course. For full attendance, you get 1 point per day (i.e., 100%).

2. Attendance plus good participation can earn more than 1 point based on my judgment of the day. So good participation is effectively extra credit.
3. If attendance earns a '1', and if any good participation can earn a bit more, obviously if you are late to the session (depending on how late you are), you earn less than '1'. There are two categories of 'lateness' that get fewer points per day.
    a. Category 1: Students who are late are unable to get the full point for attendance. Be on time. Be respectful of your fellow students who deserve an uninterrupted and focused experience.
    b. Category 2: Students who 'sign in and leave' are unable to get the full point for attendance. Avoid being that student who thinks they can 'leave quietly' after getting their attendance mark. Really, come on, only ninjas might do this without attracting obvious attention. Leaving before the end of the session is interruptive of your fellow students who deserve an uninterrupted and focused experience. Obviously, you *can* leave in the middle of the session or near the end of the session if you want, though you should expect you will get less credit for the day's 'attendance.'
        i. I'm not talking about bathroom breaks, which are fine for you to go in and out when the call of nature requires.
        ii. I'm not talking about taking a phone call as well if you have to do so. Please leave the room for phone calls and return when you are done.
        iii. The difference between those two instances above is obvious. Those are examples of people who *leave their items in class* for their own return in a minute versus people who *leave with their belongings* before the session is over. In short, avoid being late and avoid trying to rig your attendance sheet. If you really want "to rig" your score, rig it for improvement: there is extra credit by good participation and other extra credit projects noted below.^^
4. There are excused absences. Contact me before the session about why you will be missing class entirely or why you will be leaving class early, or email me after your missed session, on the day of your missed session, explaining yourself.
    a. For both situations, to get an excused absence, you require a signed and dated note about it to get a full '1' for your attendance score on that day.
    b. If you forget to talk to me before you miss class (like when you get sick and go to the doctor instead of class, or, if you have some other excused absence), give me signed notes later for those acceptable reasons that
        i. explain why you were absent,
        ii. the date of the absence, and
        iii. signed by someone in authority who can testify that this is actually true.
        iv. A dated and signed receipt from doctor or pharmacist would be ideal for the sick excuse, or a dated and signed note from another kind of other authority who can vouch for your location at the time would be ideal. So, excused absences are accepted for approved situations that are out of your control.
5. Using computer technology and mobile technology in the course is fine with me. However, be discreet. If I find your computer/phone activity disruptive or distractive to the class, to me, or to other students (like if you are doing other projects such as e-shopping, laughing, chatting, browsing the web or SNS, online gambling, or world of warcraft, etc.), I will give you one warning. I will ask you to "go out of the class to finish or to take your phone call," or to "close the cover" it if it is your laptop computer, or to "lay it upside down" on your desk if it is your tablet or mobile phone. After that one warning, repeated rudeness or uses of such technology for non-course purposes will lead to reduction of attendance/participation

points. Be respectful to others and focus in the session.

Note on Grading Procedures for Assignments:

6. Failure to complete assignments constitutes a failing grade of zero points for that exercise (F).
    a. However, late papers and assignments will be accepted, though will result in a slow reduction of the grade depending on how egregiously late it is and depending on extenuating situations per student and per assignment.
7. In everything above see how flexible I am. However, full points are possible only by following deadlines and being respectful in the session. Plan accordingly in the individual/group projects and observe deadlines.

Assignment Grading Procedures:

Individual Assignment Grading.

Since the course covers four different kinds of risk assessment projects, in at least three different countries, you write one short review paper and give an optional presentation (for extra credit) in each section—though two short papers in the material assessment section to get the hang of it. In other words, individually you will write four short papers on risk assessment. From past courses using this method, this is ideal for students to develop competency in this kind of exercise and to develop competency in how to do a formal bibliography and citation framework.

Each paper should be at least 5 double-spaced pages of review though it may be more if desired.

It should be organized and informed CLEARLY with the six journalism basics in mind:

'who, what, where, when, why (for what strategies, i.e., why* something was this way)), and how*' (with what tactics, i.e., with what technologies specifically/materially it was done).

(*For the Material Assessment the 'why' and 'how' sections would be why a certain material has such properties, and the 'how' section would be how that material property is used in applications.)

It should always have a section on ways you think this risk can be measured or sensed (as in a survey about the region's people disliking it or complaining of some ailment from it, etc.) as well as alternative technological/material options to solve the problem. If you know these six issues (plus these two other points) before you start writing and presenting, then you have a good paper and presentation.

From that information, you have a good concluding paragraph or an evaluation section about what problems should be solved by the risk assessment and what interventions are suggested to solve it (educational, material changes, technological changes, scale changes, or legal changes or processural changes (like ongoing civic feedback arrangements). So you review the risky situation, attempt empirically to measure that risk somehow in some indicators, attempt to use

course readings and terms in the paper, and attempt to offer solutions.

Use a proper citation form. These papers will: fulfill 'flipped classroom' learning from each other; give you something formally written to reference as you talk to the class about it; and can be used for assembling information for your group projects later of course (see below). You give a talk about your topic **using your paper draft before you turn in your paper in the next session.** I do this so you can get feedback from the class and from myself on how to get a better grade. I provide suggestions in these flipped classroom sessions though my lectures and my ongoing comments. You get inspiration and ideas from other students, so listen to their topics as well. However, it is your responsibility to find examples of admixed human-natural disaster failings, material failings, technological/material failings, or social failings in the world—for which you then attempt to analyze exactly how risky they are and how you would suggest to solve the issue with alternatives. As said above, in the first three individual assignments, only one can be in your home country.

Group Assignment Grading.

Follow these points for a good grade. [1] Your final group research presentation is a wider social impact assessment that includes sections about materials, technologies, environmental impacts, and social impacts. It can be a risk assessment about some area in your home country or any country you want. The only limitation is to avoid overlapping risk assessment topics in the same country with other groups, and it should be prospective (future-oriented in its analysis and recommendation). [See above chart of all presentations.] [2a] All students write group names at the head of the full paper, and then [2b] write their own names on the sections for which they were responsible or contributed toward. As a group, you assign yourselves all the categories of the wider social impact assessment topic. As a group, you decide who does which section(s).

There are six sections in the group paper:

[1] an introductory section, the journalistic issues (setting the stage: the history of the risk in question and what kind of risk you think it is mostly and what kind of intervention may solve it.

[2,3,4,5] then the sections about material assessment involved, technological assessment involved, environmental impact assessment involved, and social impact assessment involved (equity, vulnerability in certain populations, etc. social traditional cultures preserved or damaged, etc., what you think of the representative process of development here or otherwise). It is always good to introduce which section might be the main problem to solve in risk assessment before talking of other assessment topics.

[6] write a general conclusion with an evaluation (that can suggest improvements or criticisms or still unknown questions, or can suggest problems in implementing your own solutions). Particularly this is the section in which to mention why we might learn something from your country case or another country as a 'best practice' to model (this would be a comparative point: you can look to another county's example of how they solved the risk problem as a model for your own county's ideas). So this the section to mention comparisons and/or why you think that your county's version is best or great, or why another country's version is better than your chosen country's version, etc., or why the problems are so difficulty in this country versus that other country even in the same kind of risk. The evaluation should provide multiple options for

intercession or fixing future issues, and then your preferred option(s) and why it is so.

[7] Each section should have at least four citations, **as footnotes** on the page. There should be a formal bibliography as well. Number the pages. In any images, figures, or charts, put a title above it and put the citation below it (where you got the image or chart, if you found it elsewhere.) **Each sub-author should put their name as associated with the sections in some way**, whether in a table of contents, or at the top of each section in the full SIA. **Following all these seven instructions will get a good score**.

Extra Credit.

I. **Extra Credit #1**. As an encouragement to create a course record for yourself, give me a bound copy of: (1) all your graded and returned papers and other class notes at the end of the course. If you choose to do this extra credit, I will return everything to you at the close of the semester, or you can make other arrangements. In this way, you will have *a well-organized* keepsake of your own course work.

II. **Extra Credit #2.** Throughout the course, create a list of English words and/or course concepts with their definitions that you have learned in the course. This list should be mostly about course concepts mentioned, or a short description of any 'best practices' you admired in risk assessment that you learned about in the course, instead of just novel words you learned. It should at least have 25 concepts with definitions. Authors' names related to course content can be included. This can be turned in separately or with Extra Credit #1 and bound together. So if you choose Extra Credit Option #1 as well, please put the English words and course concepts you assembled (Option #2) in the same binder with Option #1.

III. **Extra Credit #3.** *Extra Description/Reaction Papers*. Your main job in this course is to do the readings thoughtfully and to help us discuss them in class and to participate in the flipped classroom sections by your preparation and discussion. To give you extra credit for doing the readings well and to facilitate class discussion, you may write an extra short description/reaction paper at least 4 times among the articles assigned in the semester. Description/reaction papers should be at least one page, though typically 1-2 pages typed (double spaced). It can be longer if you want. They should be about one reading assignment. For the weeks you choose to do your description/reaction papers, only one should be turned in each week, from only the choice of that week's readings to me in the class as a printed copy. Plus, if you want to get more extra credit, you can turn them in at the end of the course (or enclosed in the course packet extra credit Option #1 as well). However, if you turn it in earlier or during the semester, only turn in one per week on the readings that come due in that week. (In other words, don't read ahead and turn in several D/R papers before they are even scheduled in the course.) I expect them to be in English, well organized, and grammatically correct. However, I am not penalizing you on grammatical issues. I am only correcting it to help you improve. I am here to help you understand and improve,

not to harm you. You can use description/reaction papers as notes for discussion in class—and get credit for it as well.

Though these description/reaction papers may take a variety of forms, there should be two sections in them: one more objective and one subjective. The first objective section is a required half page summary of the film or paper's argument and methods (i.e., only several paragraphs). This shows me your capacity to comprehend and then relay specific content of the article or film, objectively and cogently. The second subjective section or remainder of the reaction paper is your choice of the following. All these suggestions allow you to be more subjective:

i. Things you don't understand;
ii. Further comments on all or part of the reading or film;
iii. Something you agree with;
iv. Strengths of the film/reading;
v. Weaknesses of the film/reading;
vi. Something you disagree with;
vii. How the reading relates (or doesn't relate) to personal experience, Korean examples (or if not Korean, your native country's examples), or social or technological situations in general you know about; other comparisons;
viii. Other methods or data for approaching the same question or issue that you think might be better and why;
ix. How the film/reading related to other films/readings—similar or vastly different—in this or in another course.

The reaction papers are (1) designed to help you understand the films/readings; (2) help you understand where you personally agree or disagree with them and why; (3) to improve your reading or listening comprehension in an exercise tied to writing practice in English; (4) *toward my understanding of your English language use capacities;* and (5) to provide myself feedback on the direction of the course in the questions or comments that you relate.

Assigned Readings: There will be a course packet distributed digitally. There are no printed books to purchase. The digital course packet has been assembled online for you to download, here:

LINK LOCATION HERE LATER

Course Outline
Tentative Class Schedule* [These are the course dates from Fall 2019; Spring dates added later.]

Week	Topics	Readings / Assignments
Week 1 - Class 1 T, Aug. 27	**Introduction, and Section on History of Technology Assessment** **Syllabus Review;** Topics: futurism, history of technological assessment—institutionalizations and repressions of it; Framing past 'cradle to grave' with growing 'cradle to cradle' and industrial ecological assessments	Assignment: TELL ME YOUR STUDENT BIOGRAPHY, use form: should take 3-5 minutes: https://docs.google.com/forms/d/e/1FAIpQLScln6nobhQgJHAvn8k8DBhJ2rli5TsyIK1XjyPRXr2Fo3gEUg/viewform?usp=sf_link [this is for participation credit; it has your contact information, and it is required.] Read first week many short introductory articles: Porter, Alan L. 1995. Technology Assessment," in *Impact Assessment 13* (Summer), 135-151. Banta, David. 2009. "What is Technology Assessment?" in *International Journal of Technology Assessment in Health Care* 25: Supplement 1 (2009), pp. 7–9. [talks about the US Congress defunding its own Office of Technological Management, 1972-1995], short article Cope, David. 2012. "Parliamentary Technology Assessment: Forty Years On," *Contributions to Science 8(2)*: 121–130. Institutd'Estudis Catalans, Barcelona DOI: 10.2436/20.7010.01.143. [Similar to the US defunding its own 1970's OTA in 1995, the UK's Royal Commission on Environmental Pollution was started in the early 1970s and defunded in 2011.] Rejeski David and Robert L. Olson. 2006. "Has Futurism Failed?" *The Wilson Quarterly* (Winter), pp. 14-21 [short history; a better title that is more informative of the content: "in what countries has public democratic futurism and technology assessment succeeded and where has it been repressed?"] Lee, Young Hee. 2014. "Technology and citizens: A case study of the first citizens' jury in **South Korea** (Department of Sociology, The Catholic University of Korea), [presented at New Zealand conference; it is on our cloud drive as "Lee_Technology and Citizens_Waikato.pdf", 14 pages double-spaced; it was later published as: Lee, Young Hee and Dal Yong Jin. 2014. "Technology and Citizens: An Analysis of Citizens' Jury on the Korean National Pandemic Response System." *Javnost-the Public 21(3):* 23-38.]

		Bussu, Sonia. 2015. "Public Dialogue in Science and Technology: an International Overview," ScienceWise: An Expert Resource Center, http://www.securepart.eu/download/public-dialogue-in-science-and-technology-an-international-overview150402150629.pdf. 14 pages. [and on cloud drive] Boland, Joseph. 1994. "Ecological Modernization," *Capitalism, Nature, Socialism 5(3)*: 135-141. Swedish Institute for Futures Studies, "Other [Worldwide Future/TA] Institutes [that are successful and survive while others are being removed or censored]" http://www.iffs.se/en/about-us/about-futures-studies/other-institutes/ Resource: Archive: The US's Office of Technology Assessment, all Congressional studies made, 1972-1995, hosted by Princeton University: https://www.princeton.edu/~ota/ [learn what a TIA looks like, review one of these for extra credit] Optional: Morgall, Janine. 1993. *Technology Assessment: A Feminist Perspective*; Philadelphia, Pennsylvania: Temple University Press. [Excerpts: Chapter 1-4; very good background to TA] Optional Videos: Documentary: "[US] Office of Technology Assessment," https://www.youtube.com/watch?v=ndsgiRXjO50 12:12 min Documentary: "OTA on OTA," (1983) https://www.youtube.com/watch?v=P9ske_FiFG4 17:07 min. Federation of American Scientists. **2008**. "Rep. Rush Holt Discusses the [Defunded] Office of Technology Assessment," https://www.youtube.com/watch?v=BhAM-u2F0kI 5:46 min. "Rep. Holt Urges Restored Funding for the Office of Technology Assessment," (**2009**) https://www.youtube.com/watch?v=_pFMP8e1tGc 6:45 min. "Rep. Holt Supports the [Refunding of the] Office of Technology Assessment," (**2012**) https://www.youtube.com/watch?v=XYsQSXYne4g 10:56 min. Celia Wexler, The Sunlight Foundation Advisory Committee. **2013**. "Restore the Office of Technology Assessment," https://www.youtube.com/watch?v=cs6jg2zPQKw 3:22 min.

Week 1 - Class 2 Th,Aug.29	Continued	See above, Note: **all assignments for the first week are in the same block** above due to the flexibility of new students being added that requires unpredictably reviewing the syllabus each time, or rediscussing issues for new students, or solving bureaucratic issues. Note: This is a pattern of how this syllabus is written below as well, to provide more flexibility for teaching and feedback.
Week 2 - Class 1 T, Sept. 3	**Section on History of Science & Technology** various ways to think about classifying the different kinds of technological assessment; different early methods of technology assessment (in Rejeski and Olson article); the age old battle of [1] who gets legitimacy to assesses risk data in social relations, [2] who plans, builds and extends the choices of infrastructures of materials, technologies, and social organizations (against other choices from other locations and against other plans), and [3] who ongoingly participates (or is repressed from participating) in building them or critiquing them. lecture: six parallel developments in the invention of TA: the interaction of [1] widespread illegitimacy of states/corporations/scientists in creating unsafe and risky infrastructures; expansion of extensive infrastructures of "technecologies" (Barker and Erikson reading); [2] desires in some to establish 'state oversight' to make it seem legitimate once more; [3] the rise of social movements of futures studies and alternative technological movements; [4] the rise of technological assessment methods; all these are parallel developments that help explain this movement; [5] the rise of ecological/environmental movements and the concern for resource sustainability; [6] massive European/US decolonialization after WWII and onward with the rise of new nations and their optimistic futures worldwide, to the anti-corporate globalization movements of the present. Lecture: Misa; Boulding; Polak; Bell—before Barker and Erikson.	Read: Misa, Thomas J. 2003. "The Compelling Tangle of Modernity and Technology," in *Modernity and Technology*, eds., Thomas J. Misa, Philip Brey, and Andrew Feenberg. Cambridge, Massachusetts: The MIT Press. pp. 1-30. McClellan and Dorn, eds. 2006. *Science and Technology in World History* [selected excerpts: 4, 6-10, 14-15, "Science & Early Industrial Revolution" 289-294; "Legacies of Revolution" 295-322; "Toolmakers Take Command" 339-363; "The Bomb and the Genome" 391- 414; "Under Today's Pharaohs" 415-439.] Boulding, Elise. "Why Imagine the Future?" Introducing the work of Fred Polak on the importance of motivating 'images of the future' in history, as driving history (instead of merely material drivers). [excepted from articles about the 'World Without Weapons' workshops developed by Ms. Boulding and Warren Zeigler], 2 pages. Polak, Fred. 1973. *The Image of the Future*. (Translated and Abridged by Elise Boulding). New York City, New York: Elsevier Scientific Publishing Company. Pp. 1-35 excerpt. Joel A. Barker and Scott W. Erikson. 2005. ***Five Regions** of the Future: Preparing Your Business for Tomorrows Technological Revolution*. New York, New York: Penguin Group. /

	PPT: Wendell Bell's views of methods of futures studies and what makes a futurist; my own shock that I am a futurist according to Bell's criteria, though I think a "futurist" is just someone who thinks they see a problem in the past or in the upcoming future (or both), and tries to fix it. Everyone tries to fix things by promoting a different vision or direction for humanity that takes such problems into account.	[1] This has the 'future tech preference survey' in Chapter One for assignment credit [1] print a copy of just the math table, fill it out, and do the math to see which group you are,; summarize your preferences for yourself before class, then give me the printed copy; only the printed copy with the math gets you the credit; give me the original with your handwriting, make a Xerox copy for yourself, and bring it to class; [2] for assignment credit: based on what are your higher scores, read at least one scenario in the book about that category, then write a few paragraphs about your feelings about whether you really would like to live in that future; [3] you can additionally talk about how you feel about the survey for extra credit; this is due next week! **The survey is here:** https://docs.google.com/forms/d/e/1FAIpQLSeSot0jht9HKun-KEN5e1hYG-OfRdjnP-k1NbGZV9QJza45Zg/viewform?usp=sf_link Note how they define five regions of the future, one in each (short) chapter To make it easy to read only the scenarios quickly, I made a PDF version of this with only the story-like 'scenarios' (visions of the potential future and its assessment). This is for those who want relaxing fiction and light entertainment first, so it is good reading while you travel or for relaxation! It may inspire you to read his empirical examples of such different 'technecologies' forming now, competing with each other for the 'material vision' of our future… Optional: Bell, Wendell. 2003. *Foundations of Futures Studies.* New Brunswick, Maine: Transaction Publishers. Fifth Printing of 2009. [excerpt topics: origins of futures studies and trend analysis, massive expansion of 'futuring' with decolonization, concerns of unrepresentative powerful groups designing the future without democratic input, and nine topics of themes of futures studies).

		Temple, Robert. 2007. *The Genius of China: 3,000 Years of Science, Discovery and Invention, Third Edition*. Introduction, Joseph Needham. Highlights of a 25-volume work by Dr. Joseph Needham, entitled *Science and Civilization in China*. London, UK: Carlton Publishing Group. [not on cloud drive, though everyone should open this book once in their lives] Smil, Vaclav. 2005. *Creating the Twentieth Century: Technical Innovations of 1867-1914 and Their Lasting Impact* (Technical Revolutions and Their Lasting Impact). Oxford, UK: Oxford University Press. [not on cloud drive] Origins of modern mass infrastructures in Korea in Korea; unrepresentative states' development without technological assessment or environmental impact assessment and the harm they do: Lankov, Andrei. 2007. *The Dawn of Modern Korea*. Excerpts about Korean examples of such scaled infrastructure and sociotechnical systems that began to build novel mass consumer conveniences and thus mass risks into daily life, depending on how well they work and/or how catastrophically they fail. Pye-Smith, Charlie. 2002. "Introduction," "Mining the Treasury," and "The Price of Power," in *The Subsidy Scandal: How Your Government Wastes Your Money to Wreck Your Environment*. London Sterling, VA: Earthscan; pp. 131-155. Ryan, John C. 1995. *Hazardous Handouts: Taxpayer Subsidies to Environmental Degradation*. Northwest Environmental Watch, Report #2. Additional Contribution by Rhys Roth. Seattle, Washington: Northwest Environmental Watch.
Week 2 - Class 2 Th,Sept.5	Lecture: PPT on the 11 regions of the future (my contribution (more on it later) Project: We do a survey about your views of 'future tech' preferences for the future PPT: The '**eleven regions'** of the future so far? My update to Barker/Erikson's Five Regions **#6 region of the future:** They mention a split in their 'nature tech' category in 2005. Yes, it has moved toward a true split of vision in: (new #6) **a 'local-nature tech' of local and ecologically situated biomimicry versus (old #5) a 'super-nature tech' of a wider category of all kinds of industrial scale uses of biomimicrcy and supertech/genetic manipulation** without a clear understanding of the "unintended, indirect, or delayed" effects of genetic influences of GMO or nutritional and health influences of GMO). This is seen in other future readings on the syllabus instead of in this week, so look forward in the syllabus for the GMO readings on this point. To summarize, I	[limits tech/local tech] [optional (not on cloud drive): work by Amory and Hunter Lovins] Glotfelty, Cheryll and Eve Quesnel, eds. 2015. *The Biosphere and the Bioregion: Essential Writings of Peter Berg*, New York, New York: Routledge. Excerpts. [local tech; additional 'local tech' progenitors; Élisée Reclus; Leopold Kohr; Mansur Hoda] Schumacher, Diane. 2011. *Small Is Beautiful in the 21st Century: The Legacy of E. F. Schumacher*. Totnes, UK: Green Books, Ltd. Chapter 1: Who Was E. F. Schumacher, 9-18 Chapter 2: The Schumacher Society, 19-34 Chapter 3: Third World Development Models, 35-52 Chapter 4: Food, Agriculture, and Land Use, 53-66 Chapter 5: Small-Scale Technologies for Local Sustainability, 67-76 Chapter 6: The Call for a New Economics: NEF and the E.F. Schumacher Society, 77-96 Chapter 7: Transforming Industrial Work in the First World, 97-112 Chapter 8: The Relevance of E. F. Schumacher Today, 113-123. ['super-human-nature' tech] Garreau, Joel. 2005. *Radical Evolution: The Promise and Peril of Enhancing Our Minds, Our Bodies—and What It Means to Be Human.* Broadway Books. Excerpts. ['local-human-nature' tech] Nabhan, Gary. 2004/2013. *Why Some Like it Hot: Food, Genes, and Cultural Diversity*. Republished as *Food, Genes, and Culture: Eating Right for Your Origins* (2013). Washington, DC: Island Press. Excerpts. [local tech; 'local-human-nature' tech; critiques of '*super* tech' in

keep their wider 'nature tech' as an old #5 category (which is now what I would call 'super-nature' tech, that has suffered a schism of vision that deserves another category of #6 as a 'local-nature tech' which has only selective applications and is totally against #5's vision.]

#7 and #8 regions of the future: (I'm keeping his meaning of 'human tech' as group oriented teamwork or knowledge about our biology and adding two new regions of the future. I want to **show two different visions/manipulations of the future genetics of humans** that are getting technologically arranged right now in applications already.

For #7, I would call the merging of super tech and human biological/genetic nature and human tech in a **'super-human-nature tech'** category in transhumanism, selective breeding, cyborgs, and repressive eugenics). This has its proponents and critics, each with varied scenarios of heaven on earth or pure hell that could come from punishing people for their genetics and/or tinkering with our genetics for short term goals that "seemed a good idea at the time…". Read about this in the optional reading of:

Garreau, Joel. 2005. *Radical Evolution: The Promise and Peril of Enhancing Our Minds, Our Bodies—and What It Means to Be Human. Broadway Books*. Excerpts. [This future tech is being planned by the usual suspects of major corporations and major state militaries without much tech assessment of their "UID" implications. Both German Nazis and the Soviet USSR attempted to implant their own visions of super-human-tech in human breeding and/or eugenic-murder programs in the 1930s…The idea is traceable to the British invention of eugenics in the late 1800s and British elites had their own ideas of what they wanted to get out of human genetics: a very classist intelligent aristocracy and a dumbed down worker base, or people murdered for assumptions about their genetics. That went into the Nazi era and motivated very repressive US eugenic programs as well in the early 20th century.

The following three recommended readings are not on the cloud drive:

Black, Edwin. 2012. *War Against the Weak: Eugenics and America's Campaign to Create a Master Race, Expanded Edition* [the German Nazis adapted US/UK eugenic policies, instead of ideas of 'the unfit population' being an invention of Nazi Germany…]

Elof Axel Carlson. 2001. *The Unfit: A History of a Bad Idea*. Cold Spring Harbor, N.Y.: Cold Spring Harbor Laboratory Press. [prof of SUNY-Stonybrook]

For #8, another category is the **'local-human-nature tech' vision** which actually has a lot of ongoing assessment: several thousand years of it! You might call this the project of applying "biomimicry to humans" by asking the question, how do regional populations solve their food and cultural issues differently around the world in different areas? This came out of the study of 'ethnobotany,' the study of the regional uses of plants and their interaction in culture. However, it is more than mere ethnobotany, because it directly touches on human *genetic* evolution within such ethnobotanical regional variety. Thus 'local-human-nature tech' is the applied science of biological and cultural appreciation of our genetics as more than just genetics though as built into a series of lessons of adaptation in certain regional cultures. The data comes from metabolism interaction of regional human genetics and the chemistry of our regional cultural food choices.

general and '*super* tech agricultural choices' in particular; innate critiques of 'super-human nature' tech strategies (like genetic-intervention medicine to solve dietary issues)]
Whitaker, Mark. 2011. "Bioregional Videos: Savouring Europe, Severing the EU" [and my review of Nabhan and reframing our human species as 'homo bioregionalensis' and its implications for our health and future path] [Many nice videos here] http://biostate.blogspot.com/2011/02/bioregional-videos-savouring-europe.html

Not on cloud drive, recommended reading in general:

['super-human-nature' tech]
Black, Edwin. 2012. *War Against the Weak: Eugenics and America's Campaign to Create a Master Race, Expanded Edition.* Washington, DC: Dialog Press.

['super-human-nature' tech]
Carlson, Elof Axel. 2001. *The Unfit: A History of a Bad Idea*. Cold Spring Harbor, N.Y.: Cold Spring Harbor Laboratory Press. [professor of SUNY-Stonybrook]

[super tech; futures studies]
Aligica, Paul Dragos and Kenneth R. Weinstein, eds. 2009. *The Essential Herman Kahn: In Defense of Thinking*. New York, New York: Lexington Books.

[super tech; futures studies]
Kahn, Herman. 1976. *The Next 200 Years: A Scenario for America and the World*. Written with assistance of William Brown, Leon Martel, and the Staff of the Hudson Institute. New York, New York: William Morrow and Company, Inc.

	In our regional level of genetics is the regionalized record of ongoing cultural choices of food systems and its chemicals, so people who metabolize it well survive and thrive and those others die out. So the population over time blindly is driven to adapt *genetically* to a particular chemical and nutritional and disease arrangement within their ethnobotanical situation. We get genetically adapted to various kinds of chemically regional food metabolites and regional diseases and we survive them. We get sick when we leave the region, and get well when we return. Therefore this category denies that we are merely an abstract human genetic species or population. We additionally have this layer in our genetics that is the record of successful regionalized and hybridized changes to make us fit in certain areas more than others over millennia. The implications of blaming or attempting to change genetics thus are backward and we should regionally adapt once more to get well instead of change our genes in 'super tech' ways. Three variables of our cultural choices of food, our wider climate background and our genetics interact blindly over time and make *regions* crucibles of evolution for human populations, instead of just thinking of evolution in terms of an abstract placeless selective forces on an abstract placeless humanity. So everyone is genetically 'tweaked' in good ways for different traditional ways of life worldwide—without arguing that one area is better than others. The argument is we *genetically* and *chemically* fit to regional ways (in our metabolism-food interconnections and in our regional disease connections) and we stay biologically healthy if we respect our heritage and we get sick if we ignore or abandon such interactions. So at least since the beginnings of settled agriculture which is chemically and culturally different worldwide, various populations of humans now 'fit well' *chemically and genetically* into certain climates and certain cultural food regions. Our varied and regional 'human nature' gets out of sync when we leave our ancestral diets for more 'super tech' globalized diets run by major transnational corporations, and we get healthy once more when we return to them as our (future) ideal. This adapted local view of humanity is a major critique of our 'super tech' limited global food system. This adapted local view as well is a major critique of seeing 'a blame in individual genetics' which are all good adaptions for something at some point and for some purpose. We thrive in health on a world of thousands of regional foods and we die and get sick in a world of tiny limited staples provided by transnational companies. However, in our 'modern' era, we still keep having these different metabolic affects based on our regional origins, yet people have forgotten about options as regional cultures are destroyed along with knowledge of preparation of them. Food for thought… For a taste of the data behind *this view of hybrid humans regionally fitting well genetically and chemically*, and with everyone slightly different worldwide and fitting well somewhere, see the optional reading: Nabhan, Gary. 2004. *Why Some Like it Hot: Food, Genes, and Cultural Diversity*. Republished as *Why Some Like It Hot: Eating Right for Your Origins* (2012). **For #9,** another category is **the social desire to build technology for global surveillance** and common mode integration of all citizen/consumer data monitored by governmental agencies openly or secretly (revealed by Snowden, for instance) through existing 'private' corporation and phone/internet company database knowledge handed to governments. That implies the other social movement against that: **For #10,** another category is **the social desire to reject and hamper such**	

	ongoing singular global surveillance, whether in totally decentralized internet frameworks (without central servers—users just contact each other and make their own nets), or other kinds of encryption for the people at large without going through central services at all (bitcoin for finance for instance; other kinds of arrangements of communication without central servers, etc.; short term text/SNS programs in which content disappears after a time, etc.) **For #11**, another category is **the social desire to built technology for smallness, mobility, and portability**: mobile phones, microscopes for the 'field' instead of the laboratory; mobile technologies of disaster risk reduction, etc.	
Week 3 – Class 1 T, Sept.10 POLAND	**Tech Survey Review, Database Charts of Aggregate Responses Reviewed Online** **and** **Guest Lecture/Discussion of Dr. Patrick Rose'; using the 5 regions to discuss their different way they would fix the same world problems**	**Future Tech Survey Due, Your Totals for each of the Five Categories of the Survey, Printed, Scanned/Photo'd, and put on Course Blackboard** **We Review the Future Tech Survey Information for the Patterns of the Class**
Week 3 - Class 2 Th,Sept12	Holiday – Chuseok – Without Class	
Week 4 – Class 1 T,Sept.17	Lecture: different ways of thinking about technological assessment of problems and intervention for solutions, so you can be aware of choices of intervention instead of only framing it as a 'tech fix' requirement and thus likely avoiding views about other choices of change or blame; Heberlein's 'three fixes.' Examples for 'fixing' in different ways: pollution; disease Futures Studies and the importance of a motivating (different) 'image of the future'; characteristic seen in technology assessment and other assessments and in the beginnings of technological assessment	Heberlein, Thomas A. 1974. "The Three Fixes: Technological, Cognitive, and Structural," in *Water and Community Development: Social and Economic Perspectives*, pp. 279-296]; useful in conceptualizing how all human intercessions/ solutions can be categorized and the ramifications of each choice; read beyond the water example for the abstract points he makes about technological, cognitive, and structural fixes and what characterize them as different types of social interventions. This is how to think about *choices* of interventions in assessing and fixing risk problems instead of thinking there 'has to be a tech fix' or a 'tech cause' of problems, only. Genetically-modified mosquito apocalypse plan BACKFIRES spectacularly in Brazil https://www.rt.com/news/468981-genetically-modified-mosquito-apocalypse-

	disliking current risky pathways chosen unrepresentatively by others (select states, corporations, banks, etc. [instead of all states, corporations, and banks…]) Case: Scale of Huge Modern Urbanization as a Context of Impact Assessment and Technological Assessment in All Our Lives; PPT on world history of urbanization scale; After talking of PPT of long term urbanization assessment, talk of its effects in growing disease and growing infrastructural assessment toward improvement; three fixes in the video "Horrible History" (about cholera and the fixes for it from England, which were transferred worldwide) →	backfires/ Read/Skim for the Week: Daunton, Martin. "London's 'Great Stink': The Sour Smell of Success" [pdf title: Daunton _ Londons great stink half of England urban by 1851 first country ever.pdf, 6 pages] Videos: "Ghost Map" videos on case of world important problem solving, watch on your own. Author Stephen Johnson on book The Ghost Map: http://www.ted.com/talks/steven_johnson_tours_the_ghost_map (10 min) Medicine through time, c1250-present: Horrible History - Dr John Snow (7:22) [only 1854 onward] https://www.youtube.com/watch?v=fTIREIMBQk0 Ch 1 Dr Snow's Cholera Dot Map of London https://www.youtube.com/watch?v=753XHXPLrn4 (8 min) John Snow and the cholera outbreak of 1854 with Mike Jay _ Medical London https://www.youtube.com/watch?v=Pq32LB8j2K8 (6 min) John Snow - Street History https://www.youtube.com/watch?v=8Q3GcGmS60w (1:30 min) Neuwirth, Robert. 2005. "Shadow Cities," Ted.com https://www.ted.com/talks/robert_neuwirth_on_our_shadow_cities (14 min); "For too many people in the world, Robert Neuwirth suggests, the world's globalized economic system has turned out to be a capitalism of decay. Only by embracing true sharing strategies, he argues, can people develop an equitable vision of the future. Neuwirth is the author of two previous books: Stealth of Nations (2011), on the global growth of the street markets and cross-border smuggling, and Shadow Cities (2005), on the power of squatter communities and shantytowns. His work has appeared in documentary films, on radio and television, and in many publications. In addition to writing, he has taught at Rikers Island, New York City's jail, and at Columbia University's Graduate School of Journalism." https://www.ted.com/speakers/robert_neuwirth (two other short videos of him at link; what 'tech future' by name is he encouraging as the fix?) Optional: far more environmental 'fixes' to

		urbanization externalities of waste and pollution? McDonough, William. 2005. "William McDonough on Cradle to Cradle Design (Video)." In TED Talks. Monterey, California (Feb. 2005), 20 Min. [he mumbles and talks fast; if you want, turn on the subtitles if you can't follow his words.] Http://www.ted.com/index.php/talks/view/id/104.] Author of *Biomimicry: Innovation Inspired by Nature (2005),* 'Janine Benyus shares nature's designs' (2005) [23:24 min] http://www.ted.com/index.php/talks/view/id/18
Week 4 – Class 2 Th,Sept19	Future Studies Session, and readings discussion Other topics discussed this week are: Future tech potentials or dangers to assess in the "GRINNS" future technologies: genetics, robotics, informational, nanotech, neurotechnology, and synthetic biology	Continued, see above
Week 5 – Class 1 T, Sept.24	**Section on Material Assessment** First, finishing futurism issues in impact assessment. Second, talking of materials as social infrastructures. Think about Material Assessment Short Paper Assignment: Short Paper on Material Assessment Lecture: The rubric for the Material Assessment Paper; Political Infrastructures of Materials; Muthu book; example: choices of textiles materials in industrialization and different arrangements because of that: how to understand and assess a material in the real world of social relations as a	Material Assessment Topic in database by Sunday, Sept. 29 Read/Skim/Reference: Muthu, S. S., ed. 2015. *Social Life Cycle Assessment: An Insight*. Singapore: Springer. [read at least Chapter 1 to understand what a resource this book is for you potentially in your material assessment assignment] DOCUMENTARY: Addicted to Plastic (2008) [Ian Connacher, Prod.; Cryptic Moth Productions]; https://www.youtube.com/watch?v=bCDfRjhEv48 [1:25:03; good discussion of the "unintended, indirect and delayed" issues of assessing any infrastructure and any consumptive infrastructure—though in this case, about the choice of plastic for various consumptive categories of use; this is a good illustration how to think about an infrastructure and its "UID" issues of holistic interactions; apply what you learn here to all your material assessment, instead of thinking here only about plastic; my manuscript below helps think about this more analytically:]

	politicized infrastructure instead of pretend they are all the same abstract commodities operating in the 'free market'; I will have a PPT about my manuscript on the right; and (either in this section or the next section) a PPT about doing this kind of material assessment, using my own research into the varieties of materials used in the first modern 'technecology' of industrial textiles production and the cities and different kinds of problems it made →	Whitaker, Mark. *Prolegomena for a Politicized Consumptive Infrastructure*. Manuscript. [thinking in terms of **material regimes** as: [1] flows of material/technological arrangements [2] in unpredictable political and cultural competition with other flows [3] for the same discrete social uses, instead of thinking in terms of [1] economic abstract commodities with [2] predictable economic-only relations, in [3] equally exchangeable neutral markets.] Read/skim for this week: Abraham, David S. 2011. *The Elements of Power: Gadgets, Guns, and the Struggle for a Sustainable Future in the Rare Metal Age*. New Haven, Connecticut: Yale University Press excerpts. Campbell, M. J., ed., 1990. *New Technology and Rural Development: The Social Impact*. The Association of Development Research and Training Institutions of Asia and the Pacific (ADIPA); London, UK: Routledge. [various interesting case studies for your perusal for inspiration] Optional: Whitaker, Mark. Manuscript. "Raw Materials and the Division of Labor" (on cloud drive); different implications of choosing cotton, wool, worsted in industry Mau, Chuan-hui 毛傳慧. 2012. "A Preliminary Study of the Changes in Textile Production under the Influence of Eurasian Exchanges during the Song-Yuan Period," *Crossroads: Studies on the History of Exchange Relations in the East Asian World (6)*, http://www.eacrh.net/ojs/index.php/crossroads/article/view/18/Vol6_Mau_html
Week 5 –	**Material Assessment Continued:**	Optional:

Class 2 Th,Sept26	Lecture: [1] PPT: my own research on how material choice matters; history of textile material choices in British textile industrialization, 1770s-1842; cotton, wool, worsted differences of urban and technical effects; [2] PPT: Periodic Table of the Health/Toxic Elements Discussion of Materials Science, and Materials Change in History: Abraham, Muthu, and Sass More details on the PPTs: PPT on the 'techNecology' of cotton industry worldwide, as a case example of 'material assessment' following its ongoing 'technecology' implications; my disagreements with Becker and Erikson who argued that cars were the first 'technecology', untrue! It was the industrial cotton trade and wider urban contexts of it. PPT on Periodic Table of the Elements Lecture: **Rare Earth/Rare Metals**; Periodic Table of the Healthy Elements; Nation-based charts of the periodic table, all for helping you think about material assessment topics for your paper; Current Event topic; material assessment topic: information technology material choices:	Skim earlier, discuss this session: Abraham, David S. 2011. *The Elements of Power: Gadgets, Guns, and the Struggle for a Sustainable Future in the Rare Metal Age*. New Haven, Connecticut: Yale University Press excerpts. Documentary: Super Elements BBC Documentary 2017 Rare Earth Metals Documentary Super Materials https://www.youtube.com/watch?v=GOBKa4vxAOE (46 min). Muthu, S. S., ed. 2015. *Social Life Cycle Assessment: An Insight*. Singapore: Springer. [read at least Chapter 1 to understand what a resource this book is for you potentially in your material assessment assignment] Sass, Stephen L. 2007. "Scarcity, Mother of Invention," Aug. 10: http://www.nytimes.com/2006/08/10/opinion/10sass.html?_r=0 Video: Cornell University/Dr. Stephen Sass. 2012. "Summary of his book *The Substance of Civilization: Materials and Human History From the Stone Age to the Age of Silicon*." https://www.youtube.com/watch?v=EpN87IvgG8k 35:05 min. Dr. Sass is a Professor of Materials Science, Cornell University. [I love him yet he's wrong on some historical points I will discuss, he falls easily into a material determinism… We are going to analyze materials without considering them as determining all social relations. Instead, there is a mutual causal feedback. For example, first, it is social relations that choose and determine materials (thus the opposite of Sass's point is true) and then, and only then, chosen materials 'bite back' or influence us (only to the extent 'we' keep choosing and maintaining a particular material instead of choosing something else, of course). 'We' is in quotes because materials are hardly always a representative choice, as noted in my "political infrastructural" view of all materials as potentially political regimes against other political regimes of materials.]

		Optional: Latour, Bruno. 1993. “Chapter 1: Crisis,” in *We Have Never Been Modern*. Translation by Catherine Porter. Edinburgh, Scotland: Pearson Education, Ltd. [introduction on hybridity; Lecture on hybridity and actor network theory (ANT)] Zhang, Bangwei and Yinjian Yang. 2011. "On the Substance of Civilization in Human Society Entering into the Nanomaterials Age," in *Arts and Social Sciences Journal 28*(1): 1-12. Anton, Philip S., Richard Silberglitt, and James Schneider. **2001**. The Global Technology Revolution: Bio/Nano/Materials Trends and Their Synergies with Information Technology by **2015**. Prepared for the National Intelligence Council. National Defense Research Institute. [Were they right? Read that and then read this:] Smil, Vaclav. 2008. *Global Catastrophes and Trends: The Next Fifty Years*. Cambridge, Massachusetts: The MIT Press; excerpt Chapter 1 and Chapter 2 and part of Chapter 5 (overall theme: why extended long term trend predictions are meaningless and always wrong, how to think about improbable and probable risks) The Glaring Engineering Mistake That Made Wind Turbines Inefficient | Massive Engineering Mistakes (7:46) https://www.youtube.com/watch?v=og2H7ZxkiMA Optional Videos about Rare Earths-Lanthanides, Noble Metals and Titanium: BBC: Secrets of Super Elements (2017;59 min) https://www.youtube.com/watch?v=o-aPwGflqlA Andrea Sella - Terra Rara: The strange story of some political elements (1:18:47) (2013) [Presentation at the British Royal Institution; **highly recommended**] https://www.youtube.com/watch?v=bGoZA-hvJHw Iridium - Periodic Table of Videos (7:08)

		https://www.youtube.com/watch?v=cuovE4OQi2g Impact of Materials on Society (IMOS) - Rare Earth Elements (17 min) (2016) https://www.youtube.com/watch?v=C-b1NacN3lY Super Expensive Metals, Noble Metals - Periodic Table of Videos (7:43) https://www.youtube.com/watch?v=Fg2WzCzKpYU Titanium - Metal Of The Gods (25:29) https://www.youtube.com/watch?v=CLLFNmTVmpQ Titanium - Periodic Table of Videos (8:30) https://www.youtube.com/watch?v=MpFTQYynrc4 Titanium: Kroll Method; Innovations in Manu. at Oak Ridge National Laboratory (4:59) https://www.youtube.com/watch?v=oWyrzZh3We0 Titanium production in Germany (9:27) https://www.youtube.com/watch?v=xb-Yb3gr3WI Experiments with Titanium (20:03) https://www.youtube.com/watch?v=ExT0ThvSPiA
Week 6 – Class 1 T, Oct. 1	Flipped Classroom	Volunteer Draft Presentations of Material Assessment Draft in Class, for Extra Credit
Week 6 – Class 2 Th, Oct. 3	Holiday – Korean National Foundation Day – Without Class	
Week 7– Class 1 T, Oct. 8	Holiday – University's Adjustment Day Without Class	
Week 7– Class 2 Th,Oct. 10	**Section on Technological Assessment** [discussion on 'transformation vs. non-transformation materials' in an organization leads into the issues of Perrow's four kinds of organizations of technology based on the different kinds of materials in the way they are socially	Short Paper on Material Assessment due in class or by 5:00 p.m. under my door Read (now **materials *and* organizations**, continued): Charles S. Perrow. 1967. "A Framework for the Comparative Analysis of Organizations," *American Sociological Review* 32(2) [Apr., 1967]: 194-208.

	and organizationally handled.] Lecture: entering more accurate assessment of how technologies are without abstractions, just like materials are without abstractions; both specific technical organizations and their material handling interact in specific historical ways though Perrow has four ways to generalize about this variety of material/organizational context. Perrow will be used to describe this; review of Perrow 1968 and Perrow 1984. Four points on Perrow's views of: 1. **four kinds of organizations**, based on four kinds of different material-technologies in organizations, based on how organizations are organized around the very different kind of materials they handle; if they handle different qualities of materials, the organization of these organizations are different because of it; thus *differences* in organization of technology and social relations depend on *particularities* of the material that flows through the organization [previous discussion on rare earth elements and 'transformation vs. non-transformation materials' leads into tech/organizational issues of Perrow] 2. **three kinds of accidents** (**incident, accident, or system accident/'normal accident'**) related to the kinds of materials that flow through them as well as how extensive are events of accidents depending on how the social/spatial/temporal qualities of technical organizations are arranged to create highly coupled risk in time and space across multiple sub-sections (or otherwise) in the organization. Equally we can choose to minimize this risk with less coupled time and space relationships, as well as whether it is a stable or transformation material as an option.). Accidents that are **incidents of part**	Perrow, Charles 1981. "Normal Accident at Three Mile Island," *Transactions* (July/Aug.): 17-26. Charles S. Perrow. 1984. *Normal Accidents: Living with High-Risk Technologies*. Basic Books, a division of HarperCollinsPublishers, excerpts: introduction, nuclear energy, theory chapter (Chapter 5), airplane/airline disasters, petroleum refinery disasters, and marine disasters, 'earthbound' disasters (Earthbound Systems: Dams, Quakes, Mines, & Lakes); 'exotics' (space accidents, DNA, etc.), and conclusion: 'living w/high-risk technology.' Video/Documentary: Meltdown at Three Mile Island (produced in 1979) https://www.youtube.com/watch?v=JXM3suy35rk (51:15) Disaster at Chernobyl (English subs) https://www.youtube.com/watch?v=0eEpaSLi5WQ (46 min; has a timeline to understand ongoing coupling of events and subsystems in time/space) Assignment: Fill out this Form to Notify Me of Your **Retrospective** Technological Assessment Project Topic; claim and register your topic by Oct. 17 for full participation credit: https://goo.gl/forms/scaHWCNSbPgLkBZi1 **Retrospective** Technological Assessment Project **due Oct. 22**: choose one chapter theme or idea from Perrow's book and use his ideas to analyze some kind of **past** technologically-related disaster or (normal) accident in a country of your choosing. You have to get permission to do a topic from me. Talk to me about your topic. (other projects later get into assessment of **future**

	failures, **subsystem failures**, and **systemic failures (of interactive subsystems unknown at the time**, or "normal accidents"). Factors of interactive complexity that is tightly coupled in time and tight coupled in space are a way to think about all organizations that have risk in them and how accidents occur as a series of events. 3. **DEPOSE components** (for design, equipment, procedures, operators, supplies and materials, and environment). 4. **transformation materials vs. non-transformation materials**; a special case of the above two ideas in #1 and #2. Transformation materials innately make for more tightly coupled arrangements of technology in time and space. Lecture: Perrow's view of 'normal accidents' and autonomous factor of social organizational arrangement of risk instead of just thinking about material risk or technological risk: **socio**technical risks, risk of accidents caused by *social organizational issues* of technologies and materials and how people design whole systems of flow, instead of only the materials.	implications of prospective changes to the present) Optional: Anderson, Stewart and Massimo Felici. 2012. "Chapter 1: Risks, Technologies and Societies" in *Emerging Technological Risks: Underpinning the Risk of Technology Innovation.* London, UK: Springer-Verlag. [example of Perrow's point] Palast, Greg. 1999. "Don't Buy Exxon's Fable of the Drunken Captain," (Originally *Guardian UK*) http://www.gregpalast.com/dont-buy-exxons-fable-of-the-drunken-captain/ . Palast, Greg. 2006. "British Petroleum's 'Smart Pig': The Brilliantly Profitable Timing of the Alaska Oil Pipeline Shutdown," originally for *Guardian UK*, http://www.gregpalast.com/british-petroleums-smart-pig/ . [example of Perrow's point] Palast, Greg. 2003. "A Well-Designed Disaster: The Untold Story of the Exxon Valdez," in *The Best Democracy Money Can Buy: An Investigative Reporter Exposes the Truth about Globalization, Corporate Cows, and High-Finance Fraudsters*, New York, New York City: Plume. pp. 261-73. [example of Perrow's point] Mosher, Dave. 2016. "A typo and a bag of kitty litter might cost US taxpayers billions in nuclear waste cleanup," *Business Insider: Nordic (August 26),* http://nordic.businessinsider.com/kitty-litter-nuclear-waste-accident-2016-8 Optional Videos: "1963 Reservoir Collapse (California)" https://www.youtube.com/watch?v=G8TCgreOqco 8:57 min. Lake Peigneur Disaster: Oil Driller Breaches Salt Mine Under Louisiana Lake https://www.youtube.com/watch?v=_feWtkSucvE 8:23 min. Teton Dam Disaster (showing an interview except with Perrow; [2:47]) https://www.youtube.com/watch?v=nQ0MyBg5h_A Mega Disasters - Willow Island Disaster [good example of "common mode problems"; can you see what it is?] https://www.youtube.com/watch?v=1QD8KKzgh3U (8:54) 12 Most Dangerous Dams In The World https://www.youtube.com/watch?v=OXNAPGoScUs (14:24) Documentary The Bhopal Disaster INDIA Nat Geo Full 2014 https://www.youtube.com/watch?v=HsuUQzhP2Ds (1:01:59) Mega Disasters - Texas City Refinery explosion, 5-23-2005, https://www.youtube.com/watch?v=n1RnujNxB3E (47:25) [the same accident occurred years earlier, in the same facility, mentioned in the book by Perrow.] Runaway: Explosion at T2 Laboratories https://www.youtube.com/watch?v=C561PCq5E1g (9:28) Animation of 2015 Explosion at ExxonMobil Refinery in Torrance, CA

		https://www.youtube.com/watch?v=JplAKJrgvew (7:12) Animation of Chemical Release at DuPont's La Porte Facility https://www.youtube.com/watch?v=pbFzuS8Bdhw (8:06) Recommended YouTube Channel: US Chemical Safety and Hazard Investigation Board https://www.youtube.com/user/USCSB/videos Mega Disasters - Oil Tanker Disaster*: The Puerto Rican* (2004) https://www.youtube.com/watch?v=h02JmVB6DZ8 Mega Disasters - Superstore Collapse [Sampoong Dept. Store, Apgujeong, Seoul, 1995] (45:13) https://www.youtube.com/watch?v=On-ngOexalA Sampoong Department Store Collapse 2016 | HD https://www.youtube.com/watch?v=IqSIXL9H99I (1:17:18) Italy after Morandi Bridge collapse (2018), Genoa | DW Docu https://www.youtube.com/watch?v=OIOgy4QuB74 (28:24) Tay Bridge Disaster Dundee, 1879 https://www.youtube.com/watch?v=ZylivFIrIVE (24:17) Perrow, Charles. 2014. "Disasters Evermore? Reducing our Vulnerabilities to Natural, Industrial, and Terrorist Disasters," A Foley Institute public lecture with Charles Perrow (Emeritus, Yale University), at Washington State University, March 27, 2007 https://www.youtube.com/watch?v=uYgEPHPThkk 59:40 min (Perrow takes the 'structural fix' solution to many 'normal accidents'; build smaller for less systemic risk is the only thing we can do in normal accidents, he argues). Perrow is 89 years old in this video, and he's still going strong. Other videos chosen to illustrate each chapter of Perrow's book are in a file on the cloud drive.
Week 8 – Class 1 T, Oct. 15	**Section on Technological Assessment, continued** Lecture/PPT: Overview of Perrow's Chapter 3; the many kinds of methods used in Technology Assessment Verify lack of overlap in topic selections for the Technological Assessment paper; open question session about the assignment	Topic for TIA paper in the database, today; Retrospective Technological Assessment due Saturday, Oct. 17. Perrow, *Normal Accidents*, continued Optional: Decker, Michael and Armin Grunwald. 2001. "Chapter 4: Rational Technology Assessment as Interdisciplinary Research Michael Decker and Armin Grunwald," in Gethmann, Carl Friedrich and Michael Decker, eds., in *Interdisciplinary in Technology Assessment: Implementation and its Chances and Limits*. Translator, Friederike Wlitscher. Heidelberg, Germany: Springer-Verlag GmbH, pp. 33-60. [in same PDF with this, which immediately follows the above:] Reuzel, Rob P. B. 2001. "Chapter 5: To assess rationality before anything else. A remark on the legitimacy of Rational Technology Assessment," in Gethmann, Carl Friedrich and Michael Decker, eds., in *Interdisciplinary in Technology Assessment: Implementation and its Chances and Limits*. Translator, Friederike Wlitscher. Heidelberg, Germany: Springer-Verlag GmbH, pp. 61-69. Shrader-Frechette, K. S. 1985. "Chapter 3: The Retreat from Ethical Analysis; and "Chapter 4: The Fallacy of Unfinished Business," in *Science Policy, Ethics, and Economic Methodology: Some Problems of Technology Assessment and Environmental-*

		Impact Analysis.
Week 8 – Class 2 Th,Oct. 17	Flipped Classroom	Draft Presentations about Retrospective Technological Assessment, 1; others in my office scheduled later; **Retrospective Technological Assessment due Oct. 22.**
Week 9 – Class 1 T, Oct. 22	**Section on Environmental Impact Assessment (EIA) and Disaster Impact Assessment (DIA) [Related to EIA]** Lecture: Starting EIA and DIA Environmental Impact Assessment can be about [1] **Natural Hazards**, Vulnerable Populations, and Mitigation/Resilience Building, (**DIA**: Weather/Earthquakes, etc.) and, [2] it can be about **human-created environmental problems** (**EIA**) that still have examples of more vulnerable populations under such hazards who have an interest in the same building of mitigation/resilience tactics. For both 1 and 2, DIA and EIA may influence either small regions and groups or can influence whole civilizations. Lecture/PPT: Environmental Inequalities in Social Stratification Worldwide, versus Ulrich Beck's View of Risk Society. I discuss two faces of risk analysis: [1] Risk Inequality/Vulnerability in Suffering or [2] Theoretical Risk Equality in Suffering. The first (environmental inequalities) deals	**Retrospective Technological Assessment due** Reference for EIA: (References for SIA later in the syllabus below) Morris, Peter and Riki Therivel, eds. 2001. *Methods of Environmental Impact Assessment, Second Edition*. London, UK: Spon Press. [read at least Chapter 1 to understand the resource in this book] Lawrence, David A. 2003. *Environmental Impact Assessment: Practical Solutions to Recurrent Problems*; Hoboken, New Jersey: John Wiley & Sons, Inc. [read at least Chapter 1 to understand the resource in this book] examples of EIA/DIA in online cloud drive: • Def Intel Agency 1976 Biological Effects of Electromagnetic Radiation EIA • Firstenburg 2011 Microwaves Summary of a Problem • O'Keefe Westgate 1977 Preventive Planning for Disasters • OTA_Report_1993 invasive species EIA Pollution killing more people than war and violence, says report http://www.dw.com/en/pollution-killing-more-people-than-war-and-violence-says-report/a-41044277 Diwali: Smog chokes New Delhi despite firework [sales] ban http://www.dw.com/overlay/media/en/diwali-smog-chokes-new-delhi-despite-firework-

	with the added environmental vulnerability of intentionally socially marginalized and discriminated populations, instead of environmental risks being equal for all people; versus, The second ("risk society" ideas) deals with and explores the opposite: novel kinds of material risks in which risk does involve all people equally, at least theoretically. (GMO foods, nuclear radiation, solar flares at "Carrington Event" scales, etc.). However, the world is a mixed place: some environmental risks are clearly both 1 and 2 like placement of microwave repeaters for cell phones, placement of nuclear power plants, or placement of people that live closer to GMO plantations than others. EIA-related lecture series, in order: Day 1: introduce topics in an EIA, through the EIA rubric to be fleshed out by these lectures: first lecture is an overview of five general environmental problems as a presentation and then the issue of human inequality in environmental risk. Day 2: why worry about those five problems, because there are globalizations of the past; it has happened before though hardly on this scale; why have these patterns happened?: 12 causes of environmental degradation reviewed (If you are planning environmental policies on better development, it helps to understand what you think causes environmental degradation, and how your view may be different than other people as you debate your environmental policy solutions with them since they may have different ideas about what causes environmental degradation.) Day 3: next, our novel materials means novel wider scale of environmental problems, in a fresh human equality of risk	ban/41048405/41044277 How Wolves Change Rivers (4:33) https://www.youtube.com/watch?v=ysa5OBhXz-Q Chow, Lorraine. 2018. "World's Biggest NO2 Emissions Hotspots Revealed," EcoWatch https://www.ecowatch.com/worlds-biggest-no2-emissions-hotspots-2616234815.html 60% of world's wildlife has been wiped out since 1970; "A report by the WWF found well over half of the world's population of mammals, birds, fish and reptiles have been decimated from 1970-2014 due to human activity. [instead of meaning 'species,' it means biomass] https://twitter.com/i/moments/1057069052391174146 Carrington, Damian. 2018. "World on track to lose two-thirds of wild animals by 2020, major report warns," Guardian UK https://www.theguardian.com/environment/2016/oct/27/world-on-track-to-lose-two-thirds-of-wild-animals-by-2020-major-report-warns 75% of insects disappeared over the past few decades, says a new extensive study. When the insects die, so do the larger animals. We are destroying our planet's ability to correct for our abuse. https://www.youtube.com/watch?time_continue=2&v=75NNBsnay4w (7 min) Snyder, Michael. 2019. "North America's Bird Population Is Collapsing – Nearly 3 Billion Birds Have Been Wiped Out Since 1970" [estimated 30% of North American birds gone in less than 50 years] *BlackListed News* (Published: September 22, 2019) [two major causes proposed: "toxic pesticides" & "insect decline", which are interrelated] https://www.blacklistednews.com/article/74

	conceived as a 'risk society' Day 4: EIA starts with a baseline: talk of EIA rubric baseline section; presentation about the baseline terms 'biomes, ecoregions, bioregions'—and how/where to get the data to integrate this information into your EIA paper Good resources for EIA for Day 4: https://ecoregions2017.appspot.com/ https://dopa-explorer.jrc.ec.europa.eu/ecoregion/80428 https://legacy.joshuaproject.net/people-profile.php?peo3=15141&rog3=SG [The third is a good resource for noting the geographies of bioregional/ethnic diversity in a country to note the impact on particular people instead of people in the abstract. (Note: I am not encouraging that website's evangelicalization, I am saying that the product of their research is equally a good resource for issues in an EIA, since an EIA should investigate the information they have on the location of stable or changing cultural groupings in a country affected by development projects.) Day 5: talk about origins of rubric in Morris and Theravel; introduction of their book; then all the other EIA modern topics/issues mentioned in the syllabus using a presentation of images of these substantive topical issues that could be reviewed in an EIA paper; Day 6: TBA	830/north-americas-bird-population-is-collapsing--nearly-3-billion-birds-have-been-wiped-out-since.html Durden, Tyler. 2019. "Plastic Apocalypse: Alarming Levels Of Plastic Found In Children," *Zero Hedge* https://www.zerohedge.com/health/plastic-apocalypse-alarming-levels-plastic-found-children "[S]tudy warned microplastics are turning up in human stool. Now there are new reports that show high levels of microplastics have been found in blood and urine samples of children.... The study, conducted by the German Environment Ministry and the Robert Koch Institute, found an alarming 97% of blood and urine samples from 2,500 children tested between 2014 and 2017 had traces of microplastics. Der Spiegel, the German weekly magazine, published the findings...which were part of a national study focused on "human biomonitoring" of 3 to 17-year-olds, found traces of 11 out of 15 plastic ingredients in the collected samples." 90% of world's children are breathing toxic air, WHO study finds: Guardian https://www.theguardian.com/environment/2018/oct/29/air-pollution-worlds-children-breathing-toxic-air-who-study-finds Carrington, Damian. 2019. "Revealed: air pollution may be damaging 'every organ in the body'", *UK Guardian*, "Air pollution may be damaging every organ and virtually every cell in the human body, according to a comprehensive new global review…. Comprehensive analysis finds harm from head to toe, including dementia, heart and lung disease, fertility problems and reduced intelligence." https://www.theguardian.com/environment/ng-interactive/2019/may/17/air-pollution-may-be-damaging-every-organ-and-cell-in-the-body-finds-global-review Rats who were fed Monsanto's GMO corn

		died suffering from horrifying tumors and organ damages research shows: http://www.seattleorganicrestaurants.com/vegan-whole-foods/america-gmo-label/
Week 9 – Class 2 Th,Oct. 24	Continuing EIA and DIA	Continued, 'Risk Society' VIDEO: 'Pesticides - DDT - Rachel Carson - Silent Spring" https://www.youtube.com/watch?v=Ipbc-6IvMQI 10:58 min. Read/Skim/Optional of Interest: Firstenburg, Arthur. 2011. "Microwaves: Summary of a Problem" http://www.cellphonetaskforce.org/wp-content/uploads/2011/06/microwaves_2011.pdf [9 pages]; "The Largest Biological Experiment Ever" (2006) http://www.cellphonetaskforce.org/wp-content/uploads/2011/06/largest_exp.pdf ; "Electrical Sensitivity" (2002) http://www.cellphonetaskforce.org/wp-content/uploads/2011/06/Electrical_Sensitivity.pdf [7 pages]; others accessible from: http://www.cellphonetaskforce.org/?page_id=32 Firstenburg, Arthur. 1998/9. 'Mortality Statistics [DEATH] in USA's Cities Repeatedly Rise with First Microwave Cell Phone Service Introductions, 1996-1998" http://www.cellphonetaskforce.org/wp-content/uploads/2011/06/Mortality_Part_1.pdf ; http://www.cellphonetaskforce.org/wp-content/uploads/2011/06/mortality_statistics.pdf Firstenberg, Arthur. 2004. "Killing Fields [Electromagnetic Radiation]," *The Ecologist* (June): 22-27: http://www.mindfully.org/Technology/2004/Electromagnetic-Fields-EMF1jun04.htm "Recent Research [Microwaves]," pp. 27-28; Optional Videos: "Dangers of the Wireless Cell Phone, Wi-Fi and EMF Age, Part 1" [total time, 4 parts, 40 minutes], Dr. George Carlo, founder of the Safe Wireless Initiative [hired then fired by the cell phone industry when his health/environmental impact assessment gave bad news to the already established risky industry (created without any TA/EIA at all, by law unable to oppose towers, in the USA, as it was introduced), Dr. Carlo refused to be quiet or refused to be bribed to be quiet; this will be uploaded to the cloud drive; it is summarized in this audio interview: "Wi-Fi in Schools: Dr. George Carlo" https://www.youtube.com/watch?v=IgLO9yR1JlQ 27 min. William McDonough explains in his keynote address at the 2015 Ecological #Design Forum in China "Global Industry Best Practice: Cradle to Cradle Design for the Circular Economy." https://www.youtube.com/watch?v=lyQhPckQn74 25 min (eng subtitles) Barrie Trower–EMF, Wi-Fi & Microwave Dangershttps://www.youtube.com/watch?v=ZchahZaWM8Y 18:43 min; [Assessment of] Microwave Weapons and Cancer https://www.youtube.com/watch?v=1c0J89HqBsY 1:32:18 min. Documentary on Smart Meters: "Take Back Your Power,"

		https://www.youtube.com/watch?v=ETfiksb3H4k Documentary that is ideal in covering holistically many different assessment issues of a technology. 1:24:17 min. Huisman, Wilfried and Arno Schuman, prod. 2010. *Salmonopoly*. United Docs. https://www.youtube.com/watch?v=ZJ4yZioGd04 51:47 min. The Fluoride Deception: an interview with Journalist/Author Christopher Bryson https://www.youtube.com/watch?v=VpY3RnJDlDY 28:39 min Dr. Ernest J. Sternglass on Nuclear Contamination and Cancer Part 1 "A Tsunami of Knowledge", recorded in 1992; (15:16) ; nuclear contamination; x-rays on pregnant women, etc. cancer and leukemia in children; Cold War fallout of nuclear tests https://www.youtube.com/watch?v=TPO7Tft0YlQ Dr. Ernest J. Sternglass on Nuclear Contamination and Cancer Part 2 "A Tsunami of Knowledge"; nuclear reactors studies on radiation doses around reactors https://www.youtube.com/watch?v=hN7rcjSnxZs (15:02) Dr. Ernest J. Sternglass on Nuclear Contamination and Cancer Part 3 "A Tsunami of Knowledge" strontium-90, yttrium, beta rays, bones, bone marrow (immune white cells formed in marrow), milk https://www.youtube.com/watch?v=sf5v83xnd1A (12:10) Dr. Ernest Sternglass speaks on bad effects of nuclear reactor radiation to TV media in 2008; downwind populations have more health risks/cancers https://youtu.be/OEtRFBNfSAg (5 min) ## Some Current Options for Replacing Industrial Agricultural Monocultures Agroforestry Practices – Silvopasture; Univ. of Missouri, Center for Agroforestry https://www.youtube.com/watch?v=hprobEqBUMY (13:32) Agroforestry Practices - Forest Farming; Univ. of Missouri, Center for Agroforestry https://www.youtube.com/watch?v=ssFQXgGbwTE (15:43) Agroforestry Practices - Alley Cropping; Univ. of Missouri, Center for Agroforestry https://www.youtube.com/watch?v=b8Kwb5yInPM (16:13) Agroforestry Practices – Windbreaks Univ. of Missouri, Center for Agroforestry https://www.youtube.com/watch?v=JRv4ylL3bs0 (14:31) Inga Alley Cropping Agriculture System- An Alternative To Destructive Slash And Burn, work of Mike Hands, excerpt of larger film "Up in Smoke" about his agroecological solutions for deforestation in poor countries https://www.youtube.com/watch?v=Vtu8MF5WoSo (7:49) 2,000 Year Old Food Forest in Morocco https://www.youtube.com/watch?v=ZR9LV81OpRI (4:36), narration by Geoff Lawton, second head of Permaculture Research Institute (PRI) Vietnamese 300 Year Old Food Forest with Geoff Lawton, PRI Managing Director https://www.youtube.com/watch?v=xZO0Nco2t5g (5:36) ## Redesigning Human/Agricultural

Settlements

City of the Future - Village Homes, Davis, Ca (featuring Bill Mollison, founder of Permacultural Research Institute of Australia) https://www.youtube.com/watch?v=QmFVxPjG2JI (10:36)

7 Food Forest Suburb" this is the true wealth of abundance within human settlement" who wants to live there? (Village Homes, Davis, California) https://www.youtube.com/watch?v=4w0xrNYmG3k (15:35)

Village Homes — the coolest subdivision in the country (Davis, California) https://www.youtube.com/watch?v=PGHT9eyaf4k (10:37)

Redesigning Agriculture, Resigning Educational Degrees Toward Agricultural Sustainability

https://permaculturenews.org/event/permaculture-design-certificate-november-2019/

https://agroecology.wisc.edu/ Agroecology M.S. at UW-Madison

http://www.centerforagroforestry.org/practices/sp.php

Review earlier videos of McDonough and Benyus

McDonough, William. 2005. "William McDonough on Cradle to Cradle Design (Video)." In TED Talks. Monterey, California (Feb. 2005), 20 Min. [he mumbles and talks fast; if you want, turn on the subtitles if you can't follow his words.] Http://www.ted.com/index.php/talks/view/id/104.]

Author of *Biomimicry: Innovation Inspired by Nature (2005),* 'Janine Benyus shares nature's designs' (2005) [23:24 min] http://www.ted.com/index.php/talks/view/id/18

Optional Readings, Continued:

Griffiths, Jay. 2004. "A Popular Revolt [Against the U.K.'s Police Communication System, TETRA]," *The Ecologist* (October): 40-51.

Ulrich Beck and "Risk Society" Related:

Ulrich, Beck. 1995. "Politics in Risk Society," in *Ecological Enlightenment*; pp. 1-18.

Ulrich, Beck. 1995. "Introduction; The Immorality of Industrial Society and the Contents of this Book," in *Ecological Politics in an Age of Risk*, pp. 1-13.

Bronner, Stephen Eric. 1995. "**Ecology, Politics, and Risk: The Social Theory of Ulrich Beck**," in *Capitalism Nature Socialism* 6(1): 67-86, DOI: 10.1080/10455759509358622; http://dx.doi.org/10.1080/10455759509358622 [and on cloud drive]

Goldblatt, David. 1996. "**The Sociology of Risk: Ulrich Beck**", in *Social Theory and the Environment*; Westview Press; pp. 154-187.

[On Social Inequalities: **Environmental Racism**]

		Robinson, Deborah M. 2000. "**Environmental Racism: Old Wine in a New Bottle**", in *Echoes Magazine* [8 pages]. http://www.wcc-coe.org/wcc/what/jpc/echoes/echoes-17-02.html [and on cloud drive] [On Social Inequalities in the Environment: **Environmental Racism**] Pellow, David Naguib. "**Chapter 7: Environmental Racism: Inequality in a Toxic World**," 147-164. In *The Blackwell Companion to Social Inequalities*, eds., Mary Romero and Eric Margolis. *Optional Videos:* VIDEO Dr. Robert Bullard (founding father of environmental justice) The Quest for Environmental Justice: Human Rights (52 min; 2006) [filmed at UC-Santa Barbara (introduced by Dr. William Freudenburg)] https://www.youtube.com/watch?v=SYVvbs6XsNw VIDEO Dr. Paul Mohai (founder, Environmental Justice Program, UM-Ann Arbor) "Which Came First, People or Pollution?" (55 min; 2006) [filmed at UC-Santa Barbara] https://www.youtube.com/watch?v=Ovpzdi2whcM ## Optional (History/Precursors to EIA): Bookchin, Murray. 1962. *Our Synthetic Environment*, excerpts. [Published his book under pseudonym "Lewis Herber" several months earlier than Rachel Carson's book on the same topic. Moreover, Bookchin starting writing about this from the 1950s, with the earlier example being "The Problem of Chemicals in Food" (1952), published in a NYC periodical *Contemporary Issues – A Magazine for a Democracy of Content*. This was a journal of ex-Trotskyite revolutionaries (ex-, meaning believers in 'post-scarcity' arrangements being now possible, so Marx/economic theory based on work and scarcities are superseded and pointless). Bookchin of course had different more structural 'fixes' in mind than Carson's tech fixes, though Carson's natural-balance tech fix ideas were as huge and thus can be considered 'structural fixes in their implication' as well in the face of a toxic chemical industry that had avoided all public oversight or technological assessment before. Bookchin's 1962 book:] https://libcom.org/files/Bookchin%20M.%20Our%20Synthetic%20Environment.pdf [and on cloud drive] Murray Bookchin - (1/11) - Waterloo 1985 [in eleven parts] https://www.youtube.com/watch?v=rrdIdakXaiw 9:25 min. Carson, Rachel. 1962. *Silent Spring*, excerpts "Elixirs of Death" (pp. 24-43); "Beyond the Dreams of the Borgias" (pp. 157-167); "The Human Price" (pp. 168-194); "One in Every Four" (pp. 195-216). Carson's book kick-started a popularized environmentalism in the USA; her book is a nicely merged layman's scientific-journalistic 'environmental impact assessment') instead of merely an environmentalism view by resource management officers or corporate scientists with potential conflicts of interest, this was a direct challenge from [1] a different kind of future design itself and [2] different technological/material drive that it encouraged and envisioned, and [3] with a different kind of assessment form a more public and holistic health and ecological review of such technologies and materials as a matter of course expected and desired. Paull (below) discusses Carson's science data origins and who really helped her assemble that information: people involved in alternative futures of agricultural technologies, in Rudolf Steiner's biodynamic organic agriculture movement. Carson was close with those in the ongoing court battle taking place at the

		time in New York State who wanted to maintain their organic agriculture against synthetic pesticide sprayings across the whole ecology and public. It was hardly only a "bird sanctuary" friend that inspired her in other words, as the below video tries to argue.] VIDEO: 'Pesticides - DDT - Rachel Carson - Silent Spring" https://www.youtube.com/watch?v=Ipbc-6IvMQI 10:58 min. Paull, John. 2013. "The Rachel Carson Letters and the Making of Silent Spring," *SAGE Open* (July-September): 1–12. DOI: 10.1177/2158244013494861
Week 10 – Class 1 T, Oct. 29	Lecture/Video: Genetic Modification of Plants and Animals, and Humans; GMOs; Seralini, etc.	Database Links for Individual EIA and Group SIA Assignments below: [1] Individual EIA Assignment: this can be **retrospective or prospective** (about potential changes and their effects) Short Paper on **Environmental Impact Assessment or Disaster Impact Assessment; in the database by Nov. 5.** (EIA paper due Nov. 19) Pick a disaster and review it, pick a environmental impact assessment and summarize it, or do one of your own. Claim and register your topic choice, here: https://docs.google.com/forms/d/e/1FAIpQLSeSmrQaLTCEtd8FEp5xm7RoM5O5eRnTUNhIlYgNbvufkTOs7w/viewform?usp=sf_link "First come, first serve" on topic choices; avoid overlapping topics. **[2] Assignment, toward the Group SIA (Social Impact Assessment (SIA)) project; in the database by Nov. 26:** Now that you have reviewed many different kinds of other assessments, it's time to craft your own **within a group**, based on what you have learned. Claim and register your group's members and its topic choice, here: https://goo.gl/forms/CP5WqHE7KcbZtjDj2

		"First come, first serve" on topic choices; avoid overlapping topics. I suggest you think of a good topic to help your country: think of an issue of environmental, economic, technological, and ethics/equality that you are interested in summarizing as a social problem analytically, and then offering some suggested policy options. (i.e., think about particulate pollution, or urban pollution, or garbage disposal, or the destruction or demotion of an ethnic/cultural minority by a developmental plan, or a critique of a developmental plan completed or already underway in your country (i.e., 'four rivers project.'). Or do a prospectus for a repressed technology and do a scenario of what solutions it may be connected with (the demotion of electric cars in Korea). Reference for EIA: (References for SIA later in the syllabus below) Morris, Peter and Riki Therivel, eds. 2001. *Methods of Environmental Impact Assessment, Second Edition*. London, UK: Spon Press. [read at least Chapter 1 to understand the resource in this book] Lawrence, David A. 2003. *Environmental Impact Assessment: Practical Solutions to Recurrent Problems*; Hoboken, New Jersey: John Wiley & Sons, Inc. [read at least Chapter 1 to understand the resource in this book] Optional: Smith, Jeffrey M. 2003. *Seeds of Deception: Exposing Industry and Government Lies about the Safety of the Genetically Engineered Foods You're Eating*. Fairfield, Iowa: Yes! Books. Distributed by Chelsea Green Publishing, White River Junction, Vermont. Sixth Edition. [Chapters 1-4, respectively, on: GM Potatoes, GMO in general, GM-milk, and GM L-Tryptophan amino acid poisonings] Walters, Reece. 2011. "Introduction: Planting the Seed," "Chapter 1: The politicisation of GM: Terrain, terms and concepts," "Chapter 2: The perils, prospects and controversies of GM food," "Chapter 3: Risk, Public Opinion and Consumer Resistance," and "Chapter 4: Biotech, Papal and Trade 'Wars:'

		Third World Hunger, Exploitation and the Politics of GM Food," in *Eco Crime and Genetically Modified Food.* New York, New York: Routledge.
Week 10 – Class 2 Th, Oct.31	Continued	See above
Week 11 – Class 1 T, Nov. 5	Continued	See above **EIA/DIA topic in the database by this date**
Week 11 – Class 2 Th, Nov. 7	Continued	See above
Week 12 – Class 1 T, Nov. 12	Continued, and Lecture on Klein's idea of 'disaster capitalism'; DIA and EIA merged effectively in her analysis or EIA/DIA Draft Presentations [the point is crony governments and privatizers as a group are finding ways to profit from disasters both economically as well as politically (turn them into ways of changing social, political, and cultural relations to their advantage with the shock of the disaster and its disruptions to past daily life to remove their enemies or disorganize them), instead of disasters being situations that cause people to rethink or to be interested in solving risk issues created by disasters. Instead, disasters and their risks are being used as a boon for quick economic profits and quick pre-planned political restructuring, so some rather corrupt and evil groups seek to create disasters or to allow them to be without a proper response in order to usher in the world they want against others. This poses a novel problem for environmental impact assessment since some part of a country's systemic powers may be uninterested in assessing or fixing problems in advance and are a faction that is happy to see more problems unleashed	See above Read: Klein, Naomi. 2007. *The Shock Doctrine: The Rise of Disaster Capitalism*, New York, New York: Plume. Excerpts: [a] "Introduction: Blank is Beautiful: Three Decades of Erasing and Remaking the World," 3-21. [b] Chapter 13: (Optional because it is about South Korea) "Let It Burn: The Looting of Asia and 'The Fall of a Second Berlin Wall'" 263-280. Part 5: SHOCKING TIMES: THE RISE OF THE DISASTER CAPITALISM COMPLEX [c] Chapter 19: "Blanking the Beach: 'The Second Tsunami'" 385-405. [d] Chapter 20: "Disaster Apartheid: A World of Green Zones and Red Zones," pp. 406-422. [e] Conclusion: "Shock Wears Off: The Ruse of People's Reconstruction," only 463-466 (though including full chapter for those curious about her full concluding chapter). optional: Other articles on similar 'disaster capitalism' issues in New Orleans's Hurricane Katrina (2005), TBA, on cloud drive in

	on their own population or domestic enemies as pretexts for their growing centralized or privatized giveaways and power over those groups.]	"Klein, Shock Doctrine, additions" folder.
Week 12 – Class 2 Th,Nov.14	Continued	EIA/DIA Draft Presentations
Week 13 – Class 1 T, Nov. 19	**Section on Social Impact Assessment**	**EIA/DIA due today;** **Introducing Social Impact Assessment; thinking of our last project which is a group project of Social Impact Assessment (SIA)** SIA Reference: The '**spirit'** or motivations in a SIA: cultural, political, and value systems behind SIAs, summarized in Chapter 1: Becker, Henk A. and Frank Vanclay, eds. 2003. *The International Handbook of Social Impact Assessment: Conceptual and Methodological Advances*; Cheltenham, UK: Edward Elgar. [read at least Chapter 1 to understand the resource in this book] Some **social indicators** for SIA: Wolf, Charlie P. (unk.) "Social Impact Assessment: The State of the Art," [Consultant, U. S. Army Corps of Engineers], Fort Belvoir: VA: Institute for Water Resources. [Dr. Wolf (PhD, Sociology, Princeton) was **co-founder of the IAIA**, the International Association of Impact Assessment; earlier than IAIA, he worked in the US Government's Office of Technology Assessment for a few years, and later as risk consultant to business and governments worldwide, with a special interest in South Korea.]
Week 13 – Class 2 Th,Nov.21	Discussion of some of my work on 'SIA' using comparative 'backcasting' (comparative historical views about social impact assessment of environmental degradation toward solving it (term	Brainstorming toward Group Projects on Social Impact Assessments (including all the above) Skim:

	'backcasting' mentioned in Smil's optional reading earlier: the opposite of 'forecasting'. It means what can we learn for the future from only trends in the past? I argue we can learn that unrepresentative development means environmental degradation and more representative development means sustainability, and that these forces interact with each other in history all the time in unpredictable ways of accommodation, wins, and losses; so if bad democratic institutional design is a cause of environmental problems then social re-organization of democratic politics in the book *Toward a Bioregional State* is required; and explaining these comparative historical trends and patterns in environmental degradation that comes from bad institutional design comes out in the book *Ecological Revolution*; more.	Whitaker, Mark. 2005. *Toward a Bioregional State: A Series of Letters About Political Theory and Formal Institutional Design in the Era of Sustainability.* Lincoln, Nebraska: Iuniverse. [Pp. v –17.] [and discussion of comparative historical work in *Ecological Revolution* (on the politics of environmental degradation related to the book's suggested sustainability solutions).] Whitaker, Mark. 2009. *Ecological Revolution: The Political Origins of Environmental Degradation and the Environmental Origins of Axial Religions*; *China, Japan, Europe*. Cologne, Germany: LAP Lambert Academic Publishers, AG. Optional: Guldi, Jo and David Armitage. 2014. *The History Manifesto*. This is an argument that a deep historical assessment of our problems are required. However, most know nothing of history. Therefore, they can be easily manipulated into bad decisions and 'fixes' because they are unaware of history. This is one of the rationales for you to learn more about the deeper history of any topic of your next assessment project.
Week 14 – Class 1 T, Nov.26	Flipped Classroom	**SIA group formation in the database by this date** Brainstorming toward Group Projects on Social Impact Assessments (including all the above)
Week 14 – Class 2 Th,Nov.28	Flipped Classroom	[*for those *who want more time* to integrate feedback to make their final projects better *before the deadline:* talk earlier in order to integrate improvements; turn in on deadline.]
Week 15 – Class 1 T, Dec.3	Flipped Classroom	Group Projects on Social Impact Assessments Final Group Presentations and Discussions,

		Day 1 of 2
Week 15 – Class 2 Th, Dec.5		Group Projects on Social Impact Assessments Final Group Presentations and Discussions, Day 2 of 2
Th., Dec. 12		**All groups' official deadline for final group projects is Thursday, Dec. 12 at 5:00 p.m.** **Extra credit due Dec. 12.** **Documentary Review Due Dec. 12.** I want [1] **a printed copy** of the group project to this exam session or in my office on this day to my office; **and**; [2] **a digital copy** of the final paper emailed to me from the group.
Week 17: Mon, Dec. 16 Late Deadline	**All Group Projects and Other Assignments Accepted Until This Day, Nothing Accepted After This Day**	Last day for acceptance of any extra credit or turning in any other outstanding projects (like documentary reviews, though of course with points off daily from Dec. 12 for these being late). The final group project and other assignments are accepted late after the deadline of Dec. 12 until Dec. 16h, with a reduction of points each day after Dec. 12. SIA and all assignments not accepted after Dec. 16.
Week 16 T, Dec.17	Finals Day - No Finals held for our course.	

***NOTE:**

- Due to variable class discussion times, topics may shift to later dates, but I will make every effort to maintain the sequence outlined here.
- Some of the class schedule may change. The instructor will inform the students in advance.
- The instructor reserves the right to change the syllabus or some topics of the class within as he sees fit.

Student Accessibility Support Center Statement

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Student Accessibility Support Center, ECC (Educational Communications Center) Building, Room 128, (631)632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential. Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Student Accessibility Support Center. For procedures and information go to the following website: http://www.stonybrook.edu/ehs/fire/disabilities.

Academic Integrity Statement

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html

Critical Incident Management

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.