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LAB MANUAL VERSION 2.0

CRD 20: FOOD SYSTEMS *FALL 2009*



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Lecture time and place:
T & R 3:10 to 4:30 p.m., 204 Art

Lab times, all in 105 Bowley:
W 9:10 a.m. to 12:00 p.m. CRN 17505
W 12:10 to 3:00 p.m. CRN 17506
W 3:10 to 6:00 p.m. CRN 17507

To Dorothy Hulst — teacher, professor, radical thinker,
inspiration

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Admittedly, there has been a lot of interest in teaching of late, but at too many institutions, it remains a second-class, intellectually inferior, unrewarded, devalued activity. It does need to be improved. We know why and how, but all that has been proposed and in some places partially implemented requires more work, institutional commitment, and a faith that many faculty have lost. Missing motivation, low morale, and declining salary dollars engender cynicism about the likelihood of imminent pedagogical change.

— Maryellen Weimer, *Engaging ideas* (1996: xviii)

The academy is not paradise. But learning is a place where paradise can be created. The classroom, with all its limitations, remains a location of possibility. In that field of possibility we have the opportunity to labor for freedom, to demand of ourselves and our comrades, an openness of mind and heart that allows us to face reality even as we collectively imagine ways to move beyond boundaries, to transgress. This is education as the practice of freedom.

— bell hooks, *Teaching to transgress* (1994: 207)

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The teaching team of Food Systems in fall 2008 — myself, Damian, and my amazingly dedicated teaching assistants Julia Van Soelen Kim and Aubrey White — learned a lot during the first run of the course. I am especially thankful to Maggie Lickter, an outstanding undergraduate student in Version 1.0 of the course, for her consistently helpful and frank comments on the class as it progressed, and for her reflections on the entire experience that she so bravely shared with me. A large number of data sources — reflections from Maggie, Julia, Aubrey, Damian, and myself, plus evaluations in the form of a TRC end-of-quarter review, standard UC Davis student evaluations, and students' learner documents — informed the revisions of the class and this lab manual.

What I call the renovations team — Julia, Damian, Maggie, Aubrey, Heidi Ballard, and Mark Van Horn — met numerous times with me as I struggled to reconceptualize the class and the lab based upon the numerous avenues of feedback. These individuals and the rigorous revision process helped this endeavor beyond measure. I have tried my best to respond to the numerous suggestions for improvement that came from students and the TAs. The renovations team provided invaluable responses and creative ideas as I and they suggested changes, large and small. Together we came up with some of the most innovative activities in this manual. I see it as a testament to the power of these individual's dedication to education and to teamwork.

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This manual remains a work in progress. As such, I encourage students, TAs, and colleagues to provide me with feedback on the manual itself and the learning experience it facilitates.

Ryan E. Galt, Davis, September 2009

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I. Lab Syllabus

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Lab Section B: W 12:10 to 3:00 p.m., 105 Bowley; CRN 17506
Lab Section C: W 3:10 to 6:00 p.m., 105 Bowley; CRN 17507

Website: SmartSite and <http://hcd.ucdavis.edu/courses/crd20/>

Lab Grade:	Lab work (35% of course grade):	Percentage	Due date
	Lab participation	10%	—
	Team Project 1 (on-campus work)	5%	Oct. 14
	Team Project 2 (off-campus work)	15%	Oct. 28, Nov. 18. & Dec. 2
	Cross-team locational synthesis	5%	Dec. 3

General Policies

Lab attendance is mandatory. You may miss only one lab session without penalty to your lab participation grade. After that, another missed lab session will result in a 0% for your lab participation grade. Acceptable absences are medical and family emergencies, which must be explained by a note from the appropriate person.

Outline of Activities and Assignments

For more detail, see Contents on pp. iv-v and Table 4 on p. 8.

PART I: On-Campus Food System

Lab 1	Introduction to lab Field Trip 1: Rapid Campus Appraisal
Lab 2	Field Trip 1, continued: Rapid Campus Appraisal
Lab 3	Team Project 1 Introduce Team Project 2 & Field Trip 2

PART II: Off-Campus Food System

Lab 4	Field Trip 2: Farming
Lab 5	Debriefing from Field Trip 2 Introduction to Field Trip 3
Lab 6	Field Trip 3: Food Industry (Processing, Distribution, & Retail)
Lab 7	Debriefing from Field Trip 3 Introduction to Field Trip 4
Lab 8	Field Trip 4: Food Consumption & Disposal
Lab 9	The Food System: Systems Thinking & Synthesis of Research Perspectives

Field trip equipment

For every field trip, please arrive to the meeting location prepared with the following items.

- Lab manual
- Clipboard (available at the UC Davis bookstore)
- Pen/Pencil
- Appropriate dress to be comfortable outside and standing for long periods: closed-toed walking shoes, coat/raincoat, hat, sun glasses, sunscreen, etc. (long pants strongly recommended)
- Water & snack
- Extra paper or journal for field notes (optional)
- Camera (optional)
- Tape/digital audio recorder (optional — if you use it, you will need to get the interviewee's permission before you start recording)

Equipment for labs without field trips

- Lab manual
- Pen/Pencil
- Sticky notes
- Laptop (important for Labs 5, 7, & 9 — coordinate with team members since each team only needs one or two)
- Camera (optional)

II. Overview: Justification, Expectations, & Background

Why a lab in a social science course?

Social science classes rarely have laboratory components. We associate laboratory sections with chemistry, agroecology, soil science, botany, and other natural (or biophysical) sciences. Social science classes often involve discussions, in which readings are usually the focus, and the learning activity revolves around the meanings and implications of the readings, and hearing student perspectives. The binary of the social sciences having discussion and the natural sciences having laboratories is a cultural norm, not a reflection on the inherent differences between learning in the natural and social sciences. Although there are differences in their objects of study, I firmly believe that learning in both the social and natural sciences can be enhanced through a hands-on, experiential approach, as well as through open dialogue about their subject matter.

Why have a laboratory section for Food Systems, then? In part it originates with my colleague Mark Van Horn, who teaches the natural science introductory course to the new Sustainable Agriculture and Food Systems major: PLS 15—Introduction to Sustainable Agriculture. As I was conceptualizing Food Systems as a class, he asked me: “Is it going to have a lab?” As an assistant professor — which means that I do not yet have tenure, or security of permanent employment, for which I have to work very hard, mostly at publishing — my initial thought was “no.”

Instead of allowing that answer to stand, I reflected on my own educational experiences. As a student at Modesto Junior College, I had labs in botany and geology, and I attended all of the geology field classes that I could, including amazing two-week trips roaming the American West. As an undergraduate at UC Berkeley, I had labs in soil science, though unfortunately I did not have a lab in my Agroecology course. And as a new graduate student at UW—Madison, I took a Field Study of Soils class and learned a huge amount about Wisconsin soils and how they were affected by glaciation (I also won first place in the 1999 Wisconsin Soil Judging Competition — no joke!). All of these class experiences were unparalleled learning opportunities for me. Using my hands, being outside of the classroom, seeing wide-open landscapes and their various components — landforms, vegetation, soils, human settlements, agricultural patterns — and trying to explain how the landscape came into being through reference to what I had learned in class seemed to anchor things in my mind. I can still recall many of the things I learned, while much of what I learned during lectures is now beyond immediate recall. These lab and field trip experiences were powerful ways to connect the concrete and the theoretical, and also provided a memorable context for seeing things in a new way, making new connections, and coming up with new questions to answer and problems to solve.

Educators such as John Dewey (1938) have long understood that some of the most powerful learning happens through learners’ direct experience with the object of study. David Kolb (1984) argues that learning is a cycle involving four steps: reflective observation (*reflecting*), abstract conceptualization (*thinking*), active experimentation (*doing*), and concrete experience (*experiencing*). To both of these educators, interaction with the object of study — a direct experience with it — is an important part of the learning cycle. These insights, reflected in so many practitioners’ views of how they learn in their work settings, informed the creation of this laboratory manual.

As an educator who is dedicated to enriching the learning experiences of my students, all of this made me realize that I had to answer Mark’s question with, “Yes, it will have a lab.” I realized that because of my moral commitments, and despite the higher costs and greater workload required of me, I *had* to have a lab section. Although we are going through the complete learning cycle in lab and lecture (thinking, doing, experiencing, and reflecting), *reflecting* and *thinking* are emphasized in lecture, and *doing* and *experiencing* are emphasized in lab. Lecture and lab, including the work you do outside of class for both, are two halves of the whole that is CRD 20—Food Systems at UC Davis.

Expectations of students

In return for the opportunities provided in this course, we expect that students will come to every class session prepared and ready to engage. We expect you to pursue rigorous intellectual processes including evaluating your own and others' thinking, and citing the information you use for assignments and exams. The rewards of the class will be large for students who attempt to meet these challenges. Relative to last year, we've doubled the number of field trips during lab section. The only way that this will happen logistically, however, is for the students to be somewhat involved in field trip planning. This process will involve each team and will be facilitated by your TA.

The course within the Sustainable Agriculture and Food Systems major

A great deal of research has informed the creation of the major in Sustainable Agriculture and Food Systems. CRD 20–Food Systems is the introductory social science course in that major. Researchers performed a survey of agri-food system practitioners, academics, current students, and alumni. Table 1 shows the common themes that emerged from that research, which includes the need to build students' content knowledge, experiences, and skills. These suggestions have informed the major as a whole, and I have also taken them seriously in designing this class.

Table 1: List of suggestions that were consistent across the four Delphi survey stakeholder groups

Content knowledge - Disciplinary and interdisciplinary course work in the social and natural sciences, with emphasis on integrating and applying knowledge across fields.

Experiences - A range of on- and off-campus experiences focused on linking real-world practice with theory via practical fieldwork, fieldtrips, and internships throughout the agri-food system (e.g., production, processing, distribution, and retail), as well as through civic engagement and work with nongovernmental organizations.

Skills - A focus on reading, analytic, and interpersonal communication skills for working effectively with a range of agricultural stakeholders coming from diverse backgrounds and settings. In addition, skills specific to professional field work in the agri-food system related to farming, business, and research.

Source: Parr and Van Horn (2006: 429).

The findings of this research informed the creation of the guiding principles of the major, shown in Table 2. These features have been the scaffolding around which this class has been built. In doing so, I have thought about how each of these can and should inform the assignments and activities that we do in this class. While each activity and assignment cannot incorporate all of these features, many do capture a number of them, making them multifunctional learning tools. For additional information, see Competencies for students to develop on the next page.

Table 2: Innovative features of the Sustainable Agriculture and Food Systems major at UC Davis

Interdisciplinary Breadth: Integrating natural and social science knowledge and skills.

Systems Thinking: Understanding connections among diverse components of farming and food systems, social institutions, and the environment.

Skill Development: Gaining practical skills including communication, analysis, problem solving, critical thinking, teamwork and leadership.

Experiential Learning: Engaging in wide range of practical experiences in agricultural and food systems through laboratories, field exercises, internships and other means.

Linking the Real World with Classroom: Bringing practitioners into the classroom, sending students into the field, and discussing and analyzing these experiences.

Community Building: Being part of community that includes students, faculty, internship sponsors, and others enhances learning and reflects the reality of life after school.

Source: Agricultural Sustainability Institute (2009).

Competencies for students to develop

A competency is “a combination of skills, abilities, and knowledge needed to perform a specific task” (U.S. Department of Education 2001: 1, cited in Voorhees 2001). Table 3 shows the specific competencies you will develop in the class. You will assess yourself on these competencies three times, and these assessments will be used for your Learner Document assignment.

Table 3: Competencies to develop

	Assignments & Activities ¹										Level of Development ²			
	LS	RN	FD	TP1	E1	TP2	CTP	E2	LD		P	I	A	M
Ways of Knowing and Learning														
Understand your preferred learning style.														
Develop ideas for improving your individual and collaborative learning.														
Reflect on experiences learning as an individual and as a group, in the classroom and in the field.														
Identify differences between various epistemologies (a.k.a. research perspectives, theoretical lenses).														
Understanding Values														
Examine personal values as they relate to food and the food system.														
Identify values underlying peer and popular conceptions of sustainable food and food systems.														
Explain the differences between one’s own values and the values of others concerning the sustainability of food and food systems.														
The Inquiry Process														
Pose research questions that address your interests and correspond to a theoretical lens used in agri-food studies.														
Create interview questions to answer research questions.														
Use field-based research methods (interviews and observation) involving food system actors and locations.														
Perform collaborative learning in teams through field research and analysis.														
Identify gaps in current knowledge and perspective.														

	Assignments & Activities ¹									Level of Development ²			
	LS	RN	FD	TP1	E1	TP2	CTP	E2	LD	P	I	A	M
Analysis													
Identify sections of the food system (production, processing, distribution, retail, consumption, disposal).													
Compare and contrast segments of the food system (conventional, organic, etc.).													
Assess multiple locations within the food system using questions related to social, economic, and environmental criteria.													
Demonstrate systems thinking, including identification of components, relations, and setting boundaries.													
Interpret food choices based on different cultural identities and positions in society.													
Describe the relationship between structure and agency.													
Interpersonal Skills													
Understand small group processes.													
Practice group decision-making through dialogue and consensus.													
Co-manage fieldwork project logistics.													
Writing													
Organize and express ideas clearly in outline and/or draft form.													
Connect concepts and ideas from class, labs, readings/videos, and your own ideas.													
Engage in the revision process as a necessary part of good writing.													
Presenting													
Demonstrate understanding of principles of public speaking.													
Present research findings using visual, oral, and textual communication.													

¹ LS=VAK Learning Style Activity, RN=Reading Notebooks, FD=Food Diary, TP1=Team Project 1, E1=Midterm Exam, TP2=Team Project 2, CTP=Cross-Team Project, E2=Final Exam, LD=Learner Document. NOTE: other activities that we do in lecture and lab will help develop these competencies, but they are not included for the sake of simplicity.

² P=preparatory, I=intermediate, A=advanced, M=mastery

The agri-food system

One of the main goals of the lab is to introduce you first hand to many sections of the agri-food system (or food system). A simple definition of the food system is the structure that facilitates the passage of food from farm to fork, although we will be adding to that definition in lecture and lab.

The agri-food system is enormously complex and is composed of many sections (Figure 1). By “section” I mean the parts and processes of the food system through which most of our food now passes: production (on the farm), processing, distribution, retail, consumption, and disposal.

Sarah Whatmore divides the contemporary agri-food system into four major sections: (A) the agri-technologies industry, which provides the inputs for industrial agriculture; (B) the farming industry, which makes food and agricultural commodities from land, labor, and capital; (C) the food industry, which involves food processing, packaging, catering, and retailing; and (D) food consumption, which often involves household labor to prepare the food for consumption.

Figure 1 makes it evident that there is more to the food system than these production and consumption processes and locations. The agri-food system is also strongly influenced by a number of non-material inputs including information, such as that from extension agencies, and credit, which allows farming operations to capitalize the growing season. Figure 1 also shows how the various processes and locations are embedded in state regulation. This involves the various state agencies that monitor food quality, intervene in markets through marketing boards, provide production subsidies to producers, attempt to insure food safety, enforce environmental standards, set health and nutritional policy (such as dietary guidelines), and run food security programs.

Not shown in the diagram is the increased segmentation of the food system, which is coming about through certification. For example, we can understand organic, fair trade, and local as different segments of the food system which sometimes overlap.

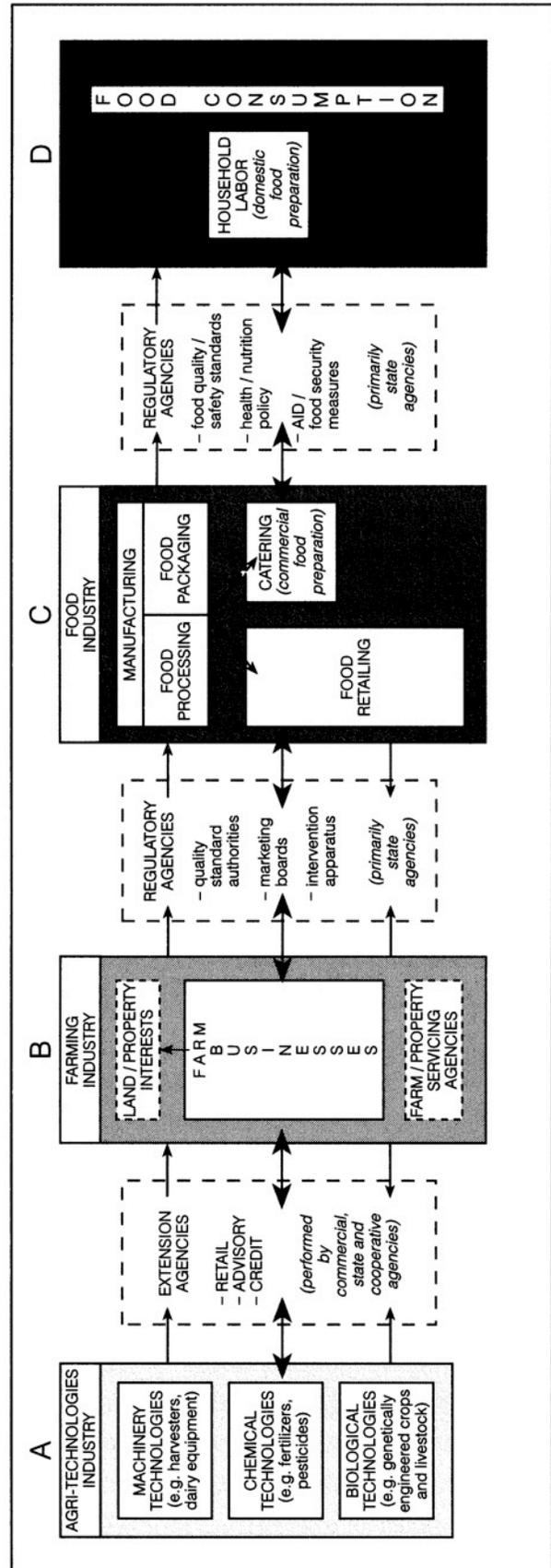


Figure 1: An outline of the contemporary, industrial agri-food system (from Whatmore 1996: 40).

Lab outline

Table 4: An outline of our activities in the lab

Lab #	Lab 1	Lab 2	Lab 3	Lab 4	Lab 5	Lab 6	Lab 7	Lab 8	Lab 9
Date	Sept. 30	Oct. 7	Oct. 14	Oct. 21	Oct. 28	Nov. 4	Nov. 18*	Nov. 25	Dec. 2
Preparation (to do before lab)	Learning style assignment + lecture readings & overview		Lab Readings 1-5	Team research & interview questions for Field Trip 2	Team report-out + Lab Readings 6-7	Team research & interview questions for Field Trip 3	Team report-out + Lab Readings 8-10	Team research & interview questions for Field Trip 4	Team report-out
Due (assignments to be turned in at start of lab)					Presentation & handout for report-out on field trip 2		Presentation & handout for report-out on field trip 3		Presentation & handout for report-out on field trip 4
Time in lab	Learning styles group-activity	Field Trip 1, continued: Rapid Campus Appraisal (NOTE: Bring bikes and meet at first field trip location)	Discuss & rehearse field work protocol	Field Trip 2: Farming	Report-out from each team on Field Trip 2	Field Trip 3: Food Industry (Processing, Distribution, & Retail)	Report-out from each team on Field Trip 3	Field Trip 4: Food Consumption & Disposal	Report-out from each team on Field Trip 4
	Learning styles reflection & sharing with class		Collect data through field work & brief report-out on field work						
	TA mini-lecture: Introduce learning goals for lab & learner document		TA mini-lecture: Introduce Team Project 2		TA + Team 2 mini-lecture: Introduce Field Trip 3		TA + Team 3 mini-lecture: Introduce Field Trip 4		Teams answer systems questions and compile portfolio
	TA mini-lecture: Introduce Team Project 1 & Field Trip 1		TA + Team 1 mini-lecture: Introduce Field Trip 2		Create research & interview questions, Field Trip 3		Create research & interview questions, Field Trip 4		Cross-Team Project on locational synthesis about one section of the food system (to create 5-minute presentation in lecture, Dec. 3)
	Field Trips 2-4 logistics	Teams creation, location selection, & research & interview question creation	Create research & interview questions, Field Trip 2						
	Field Trip 1: Rapid Campus Appraisal		Discussion: Lab Readings 1-5 + lecture readings		Discussion: Lab Readings 6-7 + lecture readings		Discussion: Lab Readings 8-10 + lecture readings		

*Note: no lab on Nov. 11, which is Veteran's Day.

Sustainability as a useful but contested concept

“Sustainability” is a guiding concept that we will continually grapple with in the class. For the major, sustainability as a goal is an agreed upon starting point. That the class is geared toward this is not an accidental or unintentional bias.

As a word, “sustainable” is not new. It has a long history, as the dictionary definition implies: “able to be maintained at a certain rate or level” (New Oxford American Dictionary 2009). However, as a concept in widespread use, it dates back to The Brundtland Report, *Our Common Future* (World Commission on Environment and Development 1987). The report defines sustainable development as meeting the needs of the current generation without undermining the ability to meet the needs of future generations. In the 1980s, sustainability as a concept was picked up by the alternative agriculture movement, and was formally given recognition by a branch of the US government in 1989 (National Research Council 1989).

Jules Pretty argues that “sustainability” is a contested concept. There are likely more than 100 definitions that exist in academic literature, and these cannot all agree. Table 5 shows some of the definitions of the concept as it applies to agri-food systems, or particular sections of the agri-food system. Patricia Allen and Jules Pretty’s work has been fundamental in expanding the focus of sustainability from the farm as the unit of analysis (e.g., in Reganold’s definition) to society as the unit of analysis. Thus, we must critically examine sustainability throughout the whole agri-food system, including in our studies the many social relationships that allow food to travel from “farm to fork.” We must also recognize social differentiation to examine *which kind of food travels to whose fork*.

Table 5: Some definitions of sustainability and sustainable agriculture

“Sustainable agriculture embraces several variants of nonconventional agriculture that are often called organic, alternative, regenerative, ecological or low-input. Just because a farm is organic or alternative does not mean that it is sustainable, however. For a farm to be sustainable, it must produce adequate amounts of high-quality food, protect its resources and be both environmentally safe and profitable. Instead of depending on purchased materials such as fertilizers, a sustainable farm relies as much as possible on beneficial natural processes and renewable resources drawn from the farm itself” (Reganold et al. 1990: 112).

“Sustainable agriculture is ... not so much a specific farming strategy as it is a systems-oriented approach to understanding complex ecological, social, and environmental interactions in rural areas” (Pretty 1994: 39).

“A sustainable agriculture is one that equitably balances concerns of environmental soundness, economic viability, and social justice among all sectors of society” (Allen et al. 1991: 37).

Sustainability should be a concept “that proscribes the exploitation of people as well as that of nature, one that combines the approaches of the social and natural sciences as well as alternative epistemologies. This concept would create a framework for working toward emancipatory social strategies while at the same time building on the work already done to learn about nature-constrained boundaries on social possibilities. Such changes are necessary to redirect sustainable agriculture from a set of narrowly defined practices that will benefit some to a transformation that can improve the life possibilities of all of us, especially those traditionally condemned to suffer the most” (Allen 1993: 14).

Neoclassical models “assume substitutability between natural and produced capitals as (i) inputs for economic capital accumulation and/or (ii) elements of consumption. These models characterize sustainability as nondecreasing social welfare over time, the social welfare being defined by an aggregate utility function or consumption level” (Faucheux et al. 1997: 529).

Sustainable agriculture “meets the needs of present and future generations. However, this goal has not been reached yet due to, among other reasons, the multiple dimensions of sustainability (productive, ecological, cultural, temporal, social and economic) and to the disciplinary approach that still prevails in many scientific-academic institutions” (Flores and Sarandon 2004: 78).

III. Lab Readings on the Theory and Practice of Learning

This section contains ten brief readings on topics that are going to be foundational for your lab work (and hopefully for your lifelong learning!). They form important building blocks with which you will begin to understand the general learning process, including the research process, as well as your individual and team learning processes. You can also see them as the foundation on which I base my educational philosophy, as described briefly in the course syllabus.

Some of these readings will seem very philosophical or theoretical, which might initially seem like a strange contrast with the practicality of actually *doing* laboratory work. I ask that you try to move beyond the false dichotomy our culture poses between theory and practice. Practice needs to be informed by theory, and in turn, practice then should be used to modify theory. This necessary linkage is a conceptualization commonly referred to as *praxis*: action based on sound theory.

Each of the readings is meant as a stand-alone introduction to a small piece of the philosophy of knowledge, research, and education — all of which are central to learning, which is our main goal in this class. Some are fairly dense, and most will use concepts that are new to you. As such, these readings are meant to be starting points for discussion and dialogue about the ideas contained within them. I do not expect you to fully understand them at first read — I do, however, expect you to give a wholehearted effort to understand them, and to identify the parts that you do not understand. I also expect that deeper understanding of these readings will be generated out of dialogue with your lab sections, your lab teams, and in lecture, as well as by going through the research process yourself and in your teams.

1. The Life Cycle of Groups

Almost all the work we do in lab will be based on team projects. The following reading is meant to help us understand group processes and the stages through which groups pass. It is adapted from Pretty et al. (2002: 39-40).

Groups can be powerful and productive when they function well. The performance and output of the team is likely to be greater than the sum of its individual members. As two proverbs from Africa say: “*Cross a river in a crowd and the crocodile won’t eat you*” and “*A single blade of grass won’t sweep the whole yard.*”

When several people come together to work on a single initiative or project, they are not necessarily a productive team. Before a group of people can function well together, they must pass through a series of stages. These have been characterized by Charles Handy (1985, cited in Pretty et al. 2002) as: (1) *Forming*, (2) *Storming*, (3) *Norming*, and (4) *Performing* (see list below).

Initially various individuals come together, sometimes as strangers, sometimes as colleagues, to create a new group for some stated purpose. In this early *forming* stage they are still a collection of individuals, each with her/his own agenda and expertise and little or no shared experience. As these individuals become more familiar with one another, they will almost certainly enter a *storming* phase where personal values and principles are challenged, roles and responsibilities are taken on and/or rejected, and the group’s objectives and way of working together are defined. If there is too much conflict and discord within the group, it will collapse. If, however, some common ground can be found, then the group will gain greater cohesion and a sense of purpose.

As the members begin to understand their roles in relation to one another and establish a shared vision or goal, they will develop a clear identity and group-specific norms of behavior. At the *norming* stage, the group has settled down. People know each other better, they have accepted the rules and probably developed little sub-groups. Once these norms have been established, the group will be ready to focus on output and will enter the *performing* stage. It is in this phase that they will work most effectively as a *team*. The confidence level of the team members will have reached the point where they are willing to take significant risks and try out new ideas on their own.

Groups generally produce fewer ideas than individuals working separately. However, they do produce better ideas as they are discussed more carefully and thought through more deeply. Therefore, groups are also more likely to identify errors of judgment before action is taken. Rather surprisingly, groups take riskier decisions than the individual members would have done if acting independently. A group therefore also tends to act more adventurously as members take courage from one another.

But, groups that are too cohesive also have drawbacks. Religious sects, military groups, sports teams, and political groups all show a tendency toward a dominant group identity. They tend to believe in their own propaganda. This is commonly called “group think.” In extreme cases, the individual’s principles are sacrificed for group loyalty, harmony, and morale. Seeking a consensus at all costs can make the group highly selective in the facts it sees, sorts, and accepts. Maintaining an open agenda, creating a sense of self-critical awareness (see Lab Reading 10) and preventing secrecy is essential if group “delusions” are to be prevented. As a team member, you will need to balance tensions between group and individual identity.

The four stages of group development

Forming

1. Group is not yet a group, but a set of individuals
2. Individuals want to establish personal identity within the group and make an impression
3. Participation is limited as individuals get familiar with the setting, the teacher, and each other
4. Individuals begin to focus on task at hand and discuss its purpose
5. The group is essentially evolving ground rules on which future decisions and actions will be based

Storming

1. Characterized by intra-group conflict and lack of unity
2. Preliminary ground rules on purpose, leadership, and behavior are damaged
3. Individuals can become hostile toward each other, and express their individuality by pursuing or revealing personal agendas
4. Friction increases, rules are broken, and arguments can happen
5. But, if successfully handled, this stage leads to new and more realistic setting of objectives, procedures, and norms

Norming

1. Characterized by overcoming tensions and developing group cohesion in which norms and practices are established
2. Group members accept the group and accept each other's idiosyncrasies
3. Group allegiance develops and group strives to maintain it
4. Development of group spirit, harmony becomes important

Performing

1. Characterized by full maturity and maximum productivity
2. Can only be reached by successfully completing previous three stages
3. Members take on roles to fulfill the group activities since they have now learnt to relate to one another
4. Rules become flexible and functional
5. Group energy channeled into identified tasks
6. New insights and solutions begin to emerge

2. Common Misconceptions of Knowledge

Andrew Sayer, a geographer and sociologist, has done a great deal of thinking and writing on method and philosophy of social science, including knowledge and its relationship to society. He develops a critical realist approach to the social sciences, and claims that most people in Anglo-American societies hold the following conceptions of knowledge. He argues that these conceptions are actually misconceptions (they are false) and that they stand in the way of a better understanding of knowledge and society. This suggests that we as knowers have to examine our understandings of what knowledge is. The reading below is paraphrased and developed from Sayer (1992: 13-17).

Misconceptions of knowledge

1. Knowledge is gained purely through contemplation or observation of the world.
2. What we know can be reduced to what we can say.
3. Knowledge can be safely regarded as a *thing* or *product*, which can be evaluated independently of any consideration of its production and use in social activity.
4. Science can simply be *assumed* as the highest form of knowledge, and other types of knowledge are dispensable or displaceable by science.

Arguments against these four misconceptions of knowledge

1. Knowledge is gained mostly through *activity*. This includes our attempts to change our environment, and our interactions with other people using shared resources, including a common language. Individuals cannot create knowledge independently of the society in which they have learned to think and act (an unsocialized human would be like a child raised by wolves, barely able to walk or perform simple tasks of reason). Since people and their ideas are objects of our knowledge (we create and hold knowledge about them), the relationship between knowledge and activity is often interactive, instead of just passive (as the result of contemplation or observation). It is clear that through self reflection, we can change the object of our knowledge (ourselves). This relationship — transforming the object of knowledge by further reflecting on it — often exists between social science knowledge and society. In other words, societies can be, and often are, transformed because of arguments advanced by social scientists. Additionally, seeing knowledge as gained through contemplation or observation ignores knowledge of *how to do something*, be it physical behavior (like riding a bike) or social behavior (like communicating with others).
2. The problem of putting spoken or written knowledge on a pedestal is that practical skills, which often cannot be communicated through language, are very important. Much of our everyday knowledge involves practical skills. Children learn a great deal before they learn to speak, and to survive all of us depend on knowledge of how to eat, and how to do many other things (even if we cannot easily communicate this knowledge verbally). The prejudice toward intellectual knowledge in the university likely arises because academics occupy a position in society in which they traditionally have a largely contemplative relationship to the world. In this context, speaking and writing are elevated above making and doing, even though all are essential parts of being human and should be emphasized in education.
3. When we emphasize knowledge as a product or thing that exists outside of us, we tend to overlook the active side of knowing, which includes the considerable work involved in

developing and sharing knowledge. To adequately conceptualize knowledge, we must consider the *production* of knowledge, which is a social activity. To make knowledge, we need raw materials and tools. These tools are linguistic, conceptual, cultural, and material. Making knowledge requires using these tools, which are drawn from available cultural resources, to act upon raw materials. These raw materials include data, pre-existing arguments, information, etc. Only through this activity is knowledge produced, reproduced, and transformed. It is not, and cannot, be made out of nothing. Thus, science is not a thing, but a social activity.

4. The belief that scientific knowledge is the highest form of knowledge is called “scientism” (this is also a central tenet of positivism). There is a strong tendency in Anglo-American natural science, social science, and philosophy of science to assume that science is the highest form of knowledge to which everyone should aspire. Instead, Sayer argues that *different kinds of knowledge are needed for different functions and contexts* (see also Reading 5). For example, knowledge of ethics is necessary to create more harmonious interactions of people in society, while knowledge of how to make terraces is needed for a viable agriculture in very steep, mountainous regions. Importantly, these contexts are overlapping, so they are not mutually exclusive. Thus, we need scientific knowledge, knowledge of how to do something (skills), and ethical knowledge and wisdom for studying agriculture and food systems. Another problem with putting scientific knowledge above other types of knowledge is that science as an activity rests on other kinds of knowledge that scientism labels as “non-science” or “anti-science.” Many philosophers who subscribe to scientism view ethical decisions as a-rational, based on emotion, and not based on science (in other words, they commonly conflate ethics with emotion). The problem with this view is that science is a specialized social activity that requires rules covering what is proper and improper conduct; it is based on ethical principles of honesty and refusing illogical arguments. Put another way, “scientific knowledge presupposes among its very foundations a kind of knowledge which ‘scientism’ has sought to deny, exclude or derogate” (Sayer 1992: 17).

3. The Building Blocks of Research: Ontology, Epistemology, Methodology, Methods, & Sources

All knowledge claims are based on *ontology* and *epistemology* (defined below). Research is based on these, and then adopts methodology and specific methods, and then attempts to get information from sources. Below I introduce each of these terms and the relationships between them.

Ontology is a branch of philosophy that deals with what exists and how entities are to be grouped and divided by similarities and differences. In other words, it is the answer to the question: “what kinds of things are there in the world?” (Benton and Craib 2001: 4). For social sciences, ontological claims are “claims and assumptions that are made about the nature of social reality, claims about what exists, what it looks like, what units make it up and how these units interact with each other. In short, ontological assumptions are concerned with what we believe constitutes social reality” (Blaikie, 2000: 8, cited in Grix 2002: 177). The different social sciences commonly begin with different ontological assumptions about the nature of social reality. “With this in mind, it is not difficult to understand how different scholarly traditions embedded in fundamentally different cultural contexts can have diverging views of the world and differing assumptions underpinning their particular approaches to social inquiry” (Grix 2002: 177). Natural sciences — indeed, all forms of knowledge — are equally based entirely on ontological claims of the same kind (Inkpen 2005).

Different cultures identify different ontological entities and domains — there is no one universal way that we humans divide up the world. Some of the fundamental divisions of western culture — most notably the ontological divide between nature and society — do not exist in many non-western ways of knowing and being. Within the modern academy, there are regional, or specific, ontologies that form the subject matter of different disciplines; each has “its own way of listing, describing and classifying the range of things, relations or processes it deals with; this is the range of things which it claims to give us knowledge of” (Benton and Craib 2001: 5). Chemists, for example, ask about the number of elements, their properties, their interactions, etc. Sociologists are interested in social relations, social classes and other divisions, oppression and exploitation, social structures, etc. Other disciplines, such as geography, range widely between specific ontologies and are aimed at synthetic understandings by showing the relationships between these specific ontologies.

Epistemology is the branch of philosophy that deals with the theory of knowledge, or how we know what we know. Our epistemology should logically flow from our ontology. The perspectives of “positivism” and “interpretivism” contain two contrasting epistemologies. Positivism maintains an epistemology that advocates applying natural science methods to the study of social reality, while interpretivism is based on the epistemological view that a strategy is needed that respects the differences between people (as objects of the social sciences) and the objects of the natural sciences, and thereby requires the social scientist to understand the subjective meaning (that held by the subject) of social actions (Grix 2002: 178).

Ontology and epistemology have an iterative relationship with one another: as our knowledge production efforts identify or theorize new entities, these can become part of the ontological assumptions that inform further efforts of understanding. For example, the very existence of microbes had to be theorized before efforts of categorization and establishment of strong causal links between disease and certain microorganisms could begin. Similarly, the existence of “capitalism” as a complete political economic system had to be posited before one could try to understand it as a whole. Once researchers have chosen their ontology and epistemology, they then proceed to methodology.

Methodology answers the question: how can we go about acquiring the knowledge we want? It is the branch of philosophy concerned with the logic of scientific inquiry, i.e., “the science and study of methods and the assumptions about the ways in which knowledge is produced” (Grix 2002: 179).

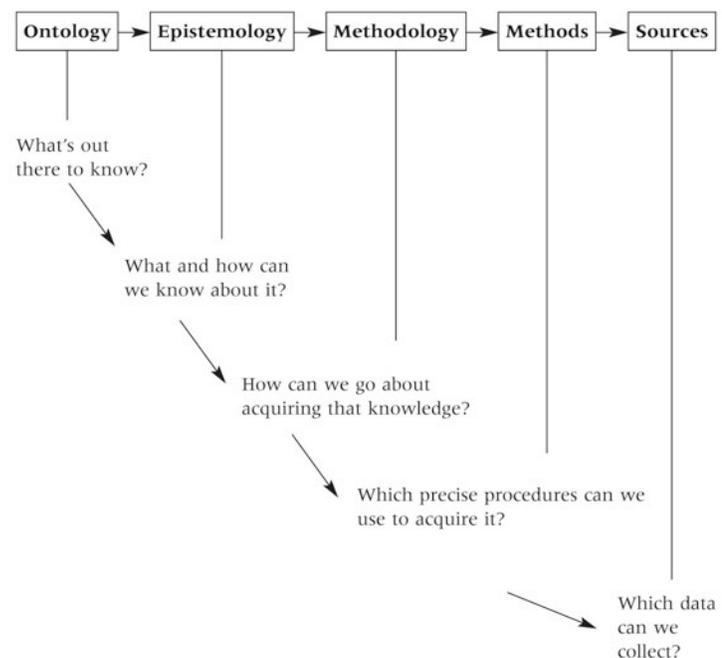
Methodology is concerned with the logics, potential, and limitations of particular research methods. For this reason it is often confused with the research methods used in a project.

Methods are the “techniques or procedures used to collate and analyse data” (Blaikie 2000: 8, cited in Grix 2002: 179). While most researchers connect certain methods to particular ontological and epistemological assumptions (e.g., surveys and statistics used by positivist researchers), Jonathan Grix (2002: 180, original emphasis) argues that we should see them “as *free from ontological and epistemological assumptions*, and the choice of which to use should be guided by research questions.” He notes that it is the researcher who uses a specific method in a particular way, and it is this process that associates methods with particular ontological and epistemological assumptions. Instead of evaluating research based on the specific methods it uses, we should judge it based on how its parts logically fit together.

Sources refer to the sources of information from which data will be collected. There are a huge range of sources available for social science inquiry. We typically group these into primary sources — information sources from which we ourselves collect the information, such as with interviews, focus groups, and surveys — and secondary sources — information sources that have been gathered by others, including historical documents, texts, and survey data from surveys conducted by other researchers (including censuses).

How do these components fit together? Figure 2.1 simplifies the research process by showing a linear relationship between the components discussed above. While this is a simplification, and there are often iterative relationships that involve learning and revision, the figure is meant to make it fairly clear that a particular view of the world — what I’ve called ontological assumptions — affects the entire research process. Crucially, “all research necessarily starts from a person’s view of the world, which itself is shaped by the experience one brings to the research process. A researcher’s methodological approach, underpinned by and reflecting specific ontological and epistemological assumptions, represents a choice of approach and research methods adopted in a given study” (Grix 2002: 179).

It is also very important to remember that even though Figure 2.1 shows a linear relationship (i.e., ontological viewpoints need to be made explicit before adopting epistemology, and so forth), it should not be assumed that one determines the other. In other words, there are a number of epistemologies that can be chosen from a given ontology, there are a large number of methodologies that can be used from a given epistemology, there are a large number of methods that can work toward a given methodology, and any specific method can gather information from a variety of sources.



Source: Figure adapted from Hay, 2002, p. 64.

Figure 3.1: The interrelationships between the building blocks of research (from Grix 2002: 180)

4. Theoretical Lenses in Agri-food Studies

There is no one discipline or interdisciplinary perspective from which to understand agri-food systems (Pretty 1995). To operationalize this reality, each student team will adopt a different theoretical lens, or perspective based on a prominent philosophy of social science (Benton and Craib 2001). You will use these theoretical lenses to analyze and assess the locations of the field trips, and as a perspective through which to understand the food system as a whole. Once teams have an understanding of the whole, we will then attempt to integrate the different perspectives within the context of each section of the food system to understand the possibilities of synthesis and incompatibility for various perspectives. Table 6 shows the five theoretical lenses (perspectives) we will be using throughout the course. The table is a simplification of a complex reality, in that it problematically denies combinations of perspectives, hides diversity within each, and does not include a number of other important theoretical lenses (e.g., social constructivism and post-structuralism).

Table 6: Theoretical lenses we will use to understand agri-food systems

	Positivism	Political economy	Feminism
Founding scholars	August Comte, Emil Durkheim	Karl Marx, Antonio Gramsci, Karl Polanyi	Carol Hanisch, Donna Haraway, bell hooks
Disciplinary homes	Economics (neoclassical), Nutrition, Political science	Sociology, Geography, Economics (developmental)	Anthropology, Geography, Sociology
Prominent agri-food scholars	The term generally has pejorative connotations, so few self-identify with it, although many subscribe to its philosophical foundations	Harriet Friedmann, Julie Guthman, Philip McMichael, Michael Watts	Deborah Barndt, Laura DeLind, Penny Van Esterik, Betty Wells
Examples in course reader	(Brookes and Barfoot 2008; Massad 2009; Roos et al. 1998)	(Friedmann 1999; Galt 2009a; Hendrickson and Heffernan 2007; Poppendieck 2000)	(Guthman 2008; McIntosh 1988; Stanley 1996; Wells and Gradwell 2001)
Other examples of agro-food scholarship	(Sterns et al. 1998; Wimberley et al. 2003)	(Friedmann 1978; Friedmann and McMichael 1989; Goodman and Watts 1997; Guthman 2004; Wells 1996)	(Barndt 2008; DeLind 1999; Trauger 2004; Van Esterik 1999; Wells and Gradwell 2001)
Goal	produce objective information; inform social policy (often with social engineering emphasis)	illuminate and critique existing power structures; create more economic equity	produce rigorous, emancipatory theory; end all forms of domination and discrimination
Ontology (see Lab Reading 3)	realist: nature/society, subject/object, and mind/matter are ontologically distinct realms; abstractions are ontologically real	critical realist: reality is differentiated and stratified; entities analyzed are merely abstractions from an ontological whole	interpretivist (meanings held by different actors are taken seriously as the basis of reality) and post-binary (most or all dichotomies are false)
Favored objects of study (see Lab Reading 2)	resource optimization and market efficiency, public opinions and perceptions	structures (food regimes, commodity chains), power relations, labor	meaning (e.g., of consumption), forms of domination and resistance (often ideological), agents and agency
Reasoning strategies (see Lab Reading 8)	deduction, especially hypothetico-deductive reasoning	induction and deduction	induction
Favored methodologies (see Burgess 1996)	survey (extensive research on a social group); experiment (controlled conditions)	case study (intensive research looking at relations between social groups); survey (extensive research); historical (existing texts and data)	case study (intensive research looking at relations between social groups)
Favored methods	questionnaires, modeling, experimental observation	historical materialist analysis of existing data, interviews	ethnography (including detailed observation made in context), in-depth interviews

5. Object-Subject Relationships in the Natural and Social Sciences

What is the relationship between an *object* of study and the observer/knower/researcher (also called the *subject* or the knowing-subject)? The following is an exploration of this question, which has important implications for the natural sciences and the social sciences and allows us to understand their differences and similarities. It is paraphrased and developed from Sayer (1992: 22-29).

Model 1

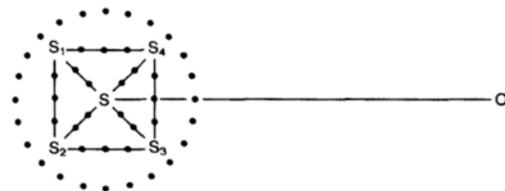
In this model, the subject (S) observes and records information about the object (O). Arguably, this is lacking both an active view of knowledge (action by the subject) and the fact that the subject must have a language in order to think about the object. Language presupposes the existence of social relations, or what we can call subject-subject relations. In societies there are often specialist subgroups, often with their own linguistic and conceptual resources (such as farmers, physicists, and the learning community we are building in this class). These subject-subject relations are not incidental to the subject-object relationship, they are a necessary condition of it. Thus, these must be included in the model.



Figure 1 Subject and object: 1

Model 2

This revised model shows that subjects have two relationships: that with the object, and that with other subjects. Subjects cannot obtain or create knowledge of objects, or of how to work with them, without using the resources of their community. In common sense understandings, which allow for us to think *with* our beliefs but not *about* them, we generally do not notice this social context. Also, rather than the relationship between subject and object being just contemplative, knowledge and action upon an object (practice) are tied from the start. Even the most “pure” science is a set of practices. Thus, the line between subject and object should be seen as formed by action, not just contemplation.



where

- • • • • is the boundary of the language community
- S_1, S_2, \dots, S_n represent other knowing subjects within the language community
- represents social relations

Figure 2 Subject and object: 2

Now we need to consider the nature of the object in question. For knowledge about objects that are non-social in origin (such as rocks, soils, etc.), the relationship between subject and object is not in itself social. Even though we think with the concepts we learn from our social upbringing, the object itself does not include concepts and meanings on its own. Instead, humans give it meaning, but non-social phenomena are impervious to the meanings we attach to them. Although we can accurately say that the object is socially *defined*, we cannot say it is socially *produced*. For this reason, we can say that even when we abandoned the theory of a flat earth for one of a spherical earth, the earth itself did not change shape. Now, what happens if we consider objects that are social in origin? We need a new model.

Model 3

If society becomes our object of study, it and all social objects must include other subjects, and their interactions. Because these social objects have relationships that are the same as the subject, the diagram is symmetrical. For clarity, the diagram maintains a separation between the subject and object of study, even though these are often bound by the same language community (the diagram would be accurate for historical studies, and those of other cultures). Because there is symmetry in the diagram, subjects can characterize objects' understandings as partial or incorrect, and vice versa. In this way, social knowledge stands in a dialogic relationship with its object (put another way, it is a subject-subject relationship, rather than a subject-object one).

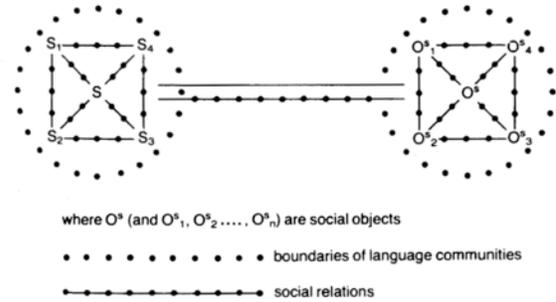


Figure 3 Subject and object: 3

Model 4

Understanding society is not just about concepts in society, or the meanings of social practices, although these are important parts. In addition to having meaning, social phenomena have an important *material* dimension (relating to physical objects composed of matter). Societies, whether they realize it or not, have a necessary relationship with nature, from its unmodified form to its states transformed by human action. Knowledge of society, then, must always make reference to this material side.

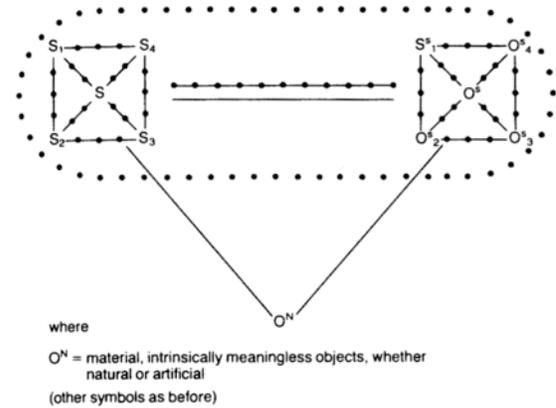


Figure 4 Subject and object: 4

This allows for some understanding of the difference between natural science and social science. Natural sciences can manipulate non-social objects.

But the situation is more complex in social science because (1) experiments that manipulate non-social objects are not particularly useful for understanding society, and (2) social phenomena can change, often in unpredictable ways, because people learn (e.g., they can learn about the researcher's/subject's understanding, they can learn from the results of a social experiment by reflecting on their own understandings and changing them, etc.). As Sayer notes, "It is not just that social experiments may be deemed undesirable, it is also that social phenomena are likely to be irreversibly changed by them in a way which does not happen with non-social phenomena, which learn nothing from being manipulated" (Sayer 1992: 29).

6. The Composition Process of Experienced Academic Writers

Why write? In brief, writing in response to well-designed assignments on subject matter problems (e.g., problems in agri-food studies) is one of the best tools for getting learners to engage in sustained critical thinking (see Reading 7). The underlying premise of the writing you will do in this class is that presenting learners with significant problems about which to write will promote cognitive and intellectual growth (Bean 1996: xiii).

A crucial but often neglected part of the writing process is what Bean (1996: xiii) calls “the intellectual struggle of revision.” It is in revision that the true craft of good writing is learned. Thus, we provide opportunities for you to receive feedback on your work before it is due (for example, by requiring exam outlines be approved prior to exams).

Before we engage deeply in the writing process over a number of years, many of us believe that great writers easily produce excellent writing in their first attempt. This is similar to the idea that we should think, and then write (as if thinking and writing are separate activities). This view of writing, fortunately for all of us, is far from how the best writing actually proceeds. Experienced writers, who we could call expert writers, constantly revise and rethink their work. They follow a writing process similar to that described by Bean (1996: 30-31) and noted below:

1. *Starting point: perception of a problem.* Expert writers feel an uncertainty, doubt a theory, note a piece of unexplained data, puzzle over an observation, confront a view that seems mistaken, or otherwise articulate a question or a problem.
2. *Exploration.* The expert writer gathers data through library or laboratory and field research and through probing of memory; explores ideas in a journal or research log, in the margins of texts, or on note cards or the backs of envelopes; analyzes, compares, puzzles, talks with others, writes to self; focuses intensely on the problem. The expert writer often and explores ideas by rapid drafting of potential pieces of the essay or by making notes, doodles, or tentative outlines.
3. *Incubation.* The writer takes time off from the problem, does other things, and lets ideas cook in the subconscious. These first three stages are all recursive (characterized by recurrence, repetition, or moving circularly as one moves between the tasks) — as writers alternate between exploration and incubation, their perception of the problem may change.
4. *Writing the first draft.* Expert writers try to get ideas down on paper in preliminary form. Some writers make an informal outline prior to writing; others discover direction as they write, often pursuing different branches of ideas without worrying about order or coherence. To avoid writer’s block, expert writers lower expectations. They do not try to make first drafts perfect as they go.
5. *Reformulation or revision.* Having gone once through the territory, expert writers take another look at the problem and think it through again. Many writers report dismantling their first drafts and starting afresh, often discovering their true thesis at the conclusion of their first draft. At this point, writers often make new outlines; they begin considering audience; they clarify their rhetorical purpose (what they are trying to persuade others to believe); they try to make the essay work for readers. Several drafts are often necessary as writer-based prose is gradually converted to reader-based prose.
6. *Editing.* At this point, craftsmanship takes over from initial creativity. Writers worry about unity, coherence, paragraphing, sentence structure. Finally, writers begin to polish by correcting spelling and punctuation. Often, the recursive nature of the process is again felt as a writer, working on sentence structure, discovers new meanings or new intentions that require the rethinking of minor or even major parts of the essay.

7. Kinds of Knowledge

Scholars have spent a great deal of time thinking about knowledge in its various forms. Intuitively, many of us understand that there are different kinds of knowledge, each relevant to different situations (e.g., knowing how to ride a bike versus knowing why the sky is blue). Below are two influential typologies of knowledge, one from thousands of years ago (Aristotle) and one from the 1970s (Habermas).

Aristotle's typology

In *Nicomachean Ethics*, the Greek philosopher Aristotle developed a typology of different kinds of knowledge, which are developed by the three “intellectual virtues.” To him, these virtues were *episteme*, *techne*, and *phronesis* (defined below). In the book *Making Social Science Matter*, Bent Flyvbjerg (2001), a critical planner, extends Aristotle's concept of *phronesis* with conceptualizations of power drawn from Michel Foucault, a post-structuralist philosopher and historian.

1. *episteme* – scientific knowledge that is universal, invariable, and context-independent; also called propositional knowledge.
2. *techne* – knowledge of craft/art that is pragmatic, variable, and context-dependent; also called skill or technical knowledge.
3. *phronesis* – knowledge regarding action on things that are good or bad for humankind. This kind of knowledge is ethical, involves “deliberation about values with reference to praxis,” and is based on practical value-rationality (Flyvbjerg 2001: 57). The point of departure of Aristotelean *phronesis* is based on three key questions: Where are we going? Is this desirable? What should be done? Flyvbjerg, drawing on Foucault, has added a fourth key question, one that is especially relevant in unequal societies: Who gains and who loses, and by which mechanisms of power? The point of social science is not for social scientists to develop the ultimate answers to these four questions and then attempt to implement them through social engineering, but rather that we should develop our own answers to them, which will be used as input “to the ongoing social dialogue about the problems and risks we face and how things may be done differently” (Flyvbjerg 2001: 61).

In many discussions of knowledge where more than one kind of knowledge is identified, Aristotle's first two types are commonly discussed with the implication that these are the only kinds of knowledge that exist (see, for example, Agrawal 1995). Tellingly, in modern English we have words derived from the first two virtues — epistemic and epistemology from *episteme*, and technology and technical from *techne* — but *phronesis* has no modern counterpart. Knowledge from both *episteme* and *techne* are needed to pursue instrumental rationality, which has come to dominate modern civilization (see discussion of Habermas below). Our educational systems generally devalue everything but epistemic knowledge (or know-what), because, according to the assumptions embedded in empiricism and positivism, it is the highest form of knowledge. Aristotle and others maintain that for informed action to be taken, we must combine these three types of knowledge. Indeed, Aristotle argued that *phronesis* was the highest intellectual virtue, “for the possession of the single virtue of prudence [*phronesis*] will carry with it the possession of them all [all the intellectual virtues]” (Aristotle 1976, cited in Flyvbjerg 1993). This means we as individuals and societies are impoverished if we engage in either/or thinking about these kinds of knowledge, and can be enriched if we use inclusive both/and thinking as emphasized by feminist scholars.

Habermas's typology

Jürgen Habermas, one of the leading modern scholars of the Frankfurt School of critical theory, developed a three-part typology of knowledge, but one that differs from Aristotle's. Habermas (1987) theorized knowledge as always serving human interests. He proposes that there are three types of knowledge based on three types of interests: *technical*, *communicative*, and *emancipatory*:

1. *technical* – based on empiricism (see Benton and Craib 2001: 13-22), it serves the interest of instrumental action necessary to adapt to the world and to predict and control events and objects. Forecasting and prediction are the main task. Values are considered irrelevant, unscientific, or obvious. This type of knowledge is that most highly valued in the natural sciences and in the positivist tradition of the social sciences. It relates to real objects.
2. *communicative* – serves the interests of communication needed for self-understanding, mutual understanding between people, and social decisions and action. Its objects of knowledge (see Reading 1) are subjective meaning — understandings, interpretations, and explanations that differ between individuals — and involves standards for evaluating and validating interpretations. As a social practice, natural sciences require this kind of knowledge, but most practitioners do not value it in and of itself.
3. *emancipatory* – includes both technical and communicative knowledge and action, but aims to reconcile possible contradictions between them. The end goal is to achieve greater individual autonomy (including self-actualization), material and symbolic freedom, and self-determination. Its objects are systematic distortions in learning and communication which generally are perpetuated by groups with very limited interests (e.g., the social elite). Those who have gained critical consciousness can generate emancipatory knowledge by challenging their oppression and supplanting it with a new understanding (see Reading 8 that draws on Paulo Freire). Critical social scientists and critical humanists generally are the scholars most concerned with emancipatory knowledge and action, as their theorizations of the world have shown hierarchies and inequalities that arise out of ideologies and practices of domination, including but not limited to white supremacy, sexism and male chauvinism, neocolonialism, neoliberalism, and homophobia.

Social theorists as different as Habermas, Max Weber, and Michel Foucault all argue that for the last 200 years technical rationality has dominated the emancipatory interest of human knowledge, or value rationality (*phronesis* to Aristotle). The result has been called “the civilization of means without ends” (Flyvbjerg 1993: 12).

8. Critical Thinking for Baccalaureate Curriculum in the Liberal Arts Tradition

John Dewey argued that critical thinking originates with learner's engagement with problems. For Dewey, problems evoke learners' curiosity and stimulate learning and critical thought. "Only by wrestling with the conditions of the problem at first hand, seeking and finding his [sic] way out, does [the student] think" (Dewey 1916: 188, cited in Bean 1996: 2). One goal of good teaching, then, is to make students aware that problems exist all around us.

Far from being "critical" as it is commonly understood, critical thinking is a "positive and productive" activity since "[c]ritical thinkers are actively engaged with life" (Brookfield 1987: 5, cited in Bean 1996: 2). Many conceive of critical thinking as minimally the identification and challenging of assumptions, and an exploration of alternative ways of acting and thinking. Arnold Arons, a physicist at the University of Washington, considers critical thinking to minimally include the following habits of thought and reasoning abilities. The list below is quoted with slight additions and modifications from Bain (2004: 85-6, citing Arons 1985).

1. Consciously raising the questions "What do we know ...? How do we know ...? Why do we accept or believe ...? What is the evidence for ...?" when studying material and approaching problems.
2. Being clearly and explicitly aware of gaps in available information. Recognizing when a conclusion is reached or a decision made in absence of complete information and being able to tolerate the ambiguity and uncertainty. Recognizing when one is taking something on faith without having examined the "How do we know ...? Why do we believe ...?" questions.
3. Discriminating between observation and inference, between established fact and subsequent conjecture.
4. Recognizing that words are symbols for ideas and not the ideas themselves. Recognizing the necessity of using only words of prior definition, rooted in shared experience, in forming a new definition and in avoiding being misled by technical jargon.
5. Probing for assumptions (particularly the implicit, unarticulated assumptions) behind a line of reasoning.
6. Drawing inferences from data and recognizing when firm inferences cannot be drawn. This subsumes a number of processes such as elementary syllogistic reasoning (e.g., dealing with basic propositional "if ... then" statements), correlational reasoning, recognizing when relevant variables have or have not been controlled.
7. Performing inductive reasoning (drawing inferences from particular cases to larger contexts) and hypothetico-deductive reasoning (given a particular situation, applying relevant knowledge of principles and constraints and visualizing, in the abstract, the plausible outcomes that might result from various changes one can imagine to be imposed on the system).
8. Discriminating between inductive and deductive reasoning; that is, being aware when an argument is being made from the particular to the general or from the general to the particular.
9. Testing one's own line of reasoning and conclusions for internal consistency and thus developing intellectual self-reliance.
10. Developing self-consciousness concerning one's own thinking and reasoning process (i.e., metacognition).

9. Undergraduate Students' Views of Education, Learning, and Knowledge

Psychologists and educators — especially William Perry and Blythe McVicker Clinchy — have examined undergraduate students' views of knowledge, education, and what it means to learn. This has led to the creation of a typology of knowers with four categories: “received knowers,” “subjective knowers,” “procedural knowers,” and “committed knowers.” Below I explain these in some detail to provide you an understanding of how students' understandings often progress during undergraduate education. My goal is for you to think about where you are currently, and to prompt your reflection on knowledge, learning, and education so that you can consider what it means to move toward the end of the typology. As with all typologies, it simplifies the real world by reducing a complex whole into abstract categories, but nevertheless I believe it is useful as a heuristic tool (one that enhances understanding). The typology is paraphrased from Bain (2004: 42-43), who is summarizing the work of Perry, Clinchy, and others.

1. *Received knowers* – Individuals at this level believe that learning is about checking with the experts to make sure they get the “right answers.” They then set about to memorize these correct answers. Truth for these knowers is external: she can ingest it, but cannot evaluate it or create it for herself. Students in this category expect education to operate according to what Paulo Freire termed the “banking system of education” in which teachers directly deposit correct answers into students' heads.
2. *Subjective knowers* – Most students begin to see that experts disagree, often very strongly. Consequently, they come to believe that all knowledge is a matter of opinion. Subjective knowers use only emotion to make judgments. As a result, knowledge is seen to be correct if it feels right. Thus, knowledge is all a matter of opinion. If a student receives a low grade, she will sometimes assert that the teacher did not like her opinion.
3. *Procedural knowers* – Individuals in this category learn how to play the game of a discipline by the rules. They see that disciplines create criteria for making judgments about knowledge and arguments, and learn to use these in their papers and assignments. Teachers often consider these students to be the brightest in the class. However, this kind of understanding does not affect how the student thinks outside of class. The student provides the teacher what she wants, but there is little to no sustained or substantial influence of education on how the student thinks, acts, or feels.
4. *Committed knowers* – Individuals in this category become creative, independent, critical thinkers. They value the ideas and ways of thinking they are exposed to, and seek to use them. They become aware of their own thinking and seek to correct it as they proceed. Within this category of committed knowers, some people are *separate knowers*. They detach themselves from an idea and remain skeptical and committed to arguing about it. Others are *connected knowers*, who look at the quality of ideas and arguments instead of trying to discredit them.

It is important to add caveats to this typology. First, people do not just march upward toward category 4. Instead they move back and forth between levels, and often operate at more than one stage at the same time. Second, in their undergraduate majors, students often advance to being procedural knowers, but in other areas of knowledge they may be received or subjective knowers.

10. Toward Critical Consciousness

Paulo Freire, a Brazilian educator and one of the world’s most influential pedagogues, developed the idea of *conscientização* — the development of the awakening of critical awareness — that can occur through progressive education. Below is a very short list of important elements of critical consciousness (paraphrased from Freire 1973).

1. A critical perception of the concrete conditions of reality. Instead of being seen as “natural,” society now reveals itself as something unfinished, as something not inexorably given; it has become a challenge rather than a hopeless limitation. This new, critical optimism requires a strong sense of social responsibility and of engagement in the task of transforming society; it cannot mean simply letting things run on.
democratic regimes and corresponds to highly permeable, interrogative, restless and dialogical forms of life.
2. Reflection upon oneself, one’s responsibilities, and one’s role in the ever-developing cultural climate; to reflect on the very *power* of reflection.
3. Authentic reflection occurs through action, ideally action to transform the concrete reality which has made people into passive objects, rather than active subjects — agents — in society’s creation and recreation.
4. A critically transitive consciousness, characterized by depth in the explanation of problems; by the substitution of causal principles for magical explanations; by the testing of one’s “findings” and by openness to revision; by the attempt to avoid distortion when perceiving problems and to avoid preconceived notions when analyzing them; by refusing to transfer responsibility; by rejecting passive positions; by soundness of argumentation; by the practice of dialogue rather than polemics; by receptivity to the new for reasons beyond mere novelty and by the good sense not to reject the old just because it is old—by accepting what is valid in both old and new. Critical transitivity is characteristic of authentically
5. Critical transitivity allows people to reevaluate constantly, to perceive the challenges of their time, to courageously discuss the problems of their context, to resist being governed completely by the emotional power of the transition, and to intervene in that context.
6. Critical transitivity can occur when people are launched into debate, examining common problems.
7. Understanding that alienation results from the current organization of human labor in specialization and mass production.
8. A new stance toward problems, oriented toward research and away from repeating irrelevant principles, or the transmission of inert ideas, which are merely received into the mind without being utilized, tested, or thrown into fresh combinations.
9. Seeing education as an act of love, and thus an act of courage. Education cannot fear the analysis of reality or avoid creative discussion.
10. Create your own: _____

IV. Lab Assignment Instructions

Labs in the class are geared to helping students complete the three major lab assignments. The details for each of these assignments are found this section of the lab manual. The assignments are:

- Team Project 1: UC Davis Rapid Campus Food System Appraisal
- Team Project 2: Yolo County Food Systems
- Cross-Team Project: Synthesis for Each Food System Section

Team Project 1: UC Davis Rapid Campus Food System Appraisal

Assignment Overview

Our UC Davis campus was chosen to be the location of the first team project because of its immediate relevance to students and because it presents a powerful opportunity to experience and reflect upon a diverse arrangement of food system actors and locations operating at different scales. Team membership will be determined by learning style and experience with the food system and assigned by the TA in Lab 2 after the completion of the on-campus field trip.

The on-campus project and fieldwork is designed to develop the knowledge, skills, and confidence that are necessary for conducting Team Project 2. The learning goals of both Team Projects are to develop students' knowledge and skills related to the inquiry/research process. As a whole, the Team Project fieldwork supports the practice of effective observation and analysis, and oral and written communication.

You will be introduced to the on-campus food system through Field Trip 1, which takes place during Lab 1 and Lab 2. At the end of Lab 2, you will be given time as a team to select a location on campus that you want to return to for your research. Once you have selected your location, you will go through a process to create your research questions and interview questions.

In Lab 3, you will visit the campus location you selected and interview your location host. You will take detailed notes on the answers to your research question, as well as notes on your observations of the location. Your team will then return to lab and organize a very brief 5-minute presentation to report your experience and findings to your lab section. By going through the research process — creation of research questions, creation of interview questions, data collection through interviews and field work, data analysis, and presentation — you will gain important foundations for Team Project 2, and for your future involvement in experiential learning.

Important dates

Team creation, location selection, and creation of research and interview questions will take place in Lab 2.

Field work and report out will take place in Lab 3.

Course grade

This assignment is worth 5% of your total course grade

Team Project 2: Yolo County Food Systems

Just as Team Project 1 structured Labs 1 through 3, Team Project 2 will serve as our guiding project for Labs 4 through 9. You will be going through the research cycle (Parts 2, 3, 4, & 5) three times, once for each off-campus field trip. These instructions give you an overview; you can find step-by-step instructions within the lab activities section of the lab manual.

Assignment overview

As teams you will collaboratively create and execute a small research project in line with your interests, the guiding objectives of the field trips, and the theoretical lens that your team will be assigned. This research will be done in three main phases, corresponding with each off-campus field trip (Field Trips 2, 3, and 4). In the lab session following each off-campus field trip your team will make a presentation about your research questions and findings. In the last lab, you will create a portfolio out of the three presentations by creating conclusions about the food system as a whole system from the perspective of your team's theoretical lens. Detailed instructions for each portion of the assignment are below. Labs 4-9 are dedicated to Team Project 2.

The six food system sections for Team Project 2

Team Project 2 will span the entire food system, from production to consumption, and back again. Below are the various sections of the food systems we will be visiting, along with examples of social units and specific locations where they are found.

<i>Section</i>	<i>Examples of social units of analysis</i>	<i>Examples of locations</i>
Production	Farm, dairy, feedlot, garden	Pacific Star Gardens
Processing	Food manufacturing facility	Blue Diamond
Distribution	Distributor, institutional food facility	DJUSD warehouse
Retail	Grocery store, restaurant	Nugget, Davis Food Co-Op
Consumption	Household, individual, housing co-op	Pacifico Student Cooperative
Disposal	Waste collection firm, household (compost)	Davis Waste Removal Co.

Important dates

Research and interview questions: due to your TA in hard copy at the end of each lab prior to field trips (Labs 3, 5, & 7)

Data collection through fieldwork: will occur during Field Trips 2, 3, & 4 (Labs 4, 6, & 8)

Presentations & handouts: you will report-out to your lab section for 15 minutes after each off-campus field trip. An annotated presentation and a handout are due via SmartSite at the beginning of Labs 5, 7, and 9.

Food System Portfolio: will be created in Lab 9 and is due in the middle of Lab 9

Course grade

This assignment is worth 15% of your total course grade.

Part 1: Organize one field trip, in coordination with your lab section's TA

One of the most important parts of the social science research process is to make contact with people who will provide primary data for you as a researcher. You and your team members are responsible for organizing one field trip on behalf of your lab section, in coordination with your TA. Seek your TA's guidance during office hours and/or by email if you need help with any of the following:

- Work with your team to discuss possible field trip locations from the provided choices, in addition to any other locations you may be familiar with personally. Work together to choose a field trip location that you all agree will be the most interesting and beneficial

- for your lab section's learning experience.
- Briefly research your chosen field trip locations on the internet by visiting the location's website, looking at the location via Google Earth or Google Maps in Satellite mode, and conducting any other on-line research that you feel is appropriate. You don't need to spend more than ~15 to 20 minutes familiarizing yourself with the location.
- Nominate one person from your team to contact the location(s) to arrange the field trip, at least 3 weeks in advance. Use the provided telephone script and/or email template. CC your TA on all email communication, or update your TA by email if you have a telephone conversation.
- Make yourself available to answer any questions the field trip host(s) may have, or direct questions to your TA.
- Confirm the field trip date, time, meeting location, and driving directions with the host 1 week before the field trip.
- Provide the host with suggested themes to talk about on the field trip tour (see p. 36).
- On the day of the field trip, assist the TA with picking up and dropping off the field trip vans from Fleet Services and driving vans to the field trip location.
- Send a "Thank You" card or email to your field trip host on behalf of the whole lab section, within one week after the field trip.

Part 2: Guidelines for your research project

Guideline 1: recognizing the role of theoretical lenses and values

One constraint we are imposing is that we require your research be conducted through your team's theoretical lens and that it deals with the "Guiding objectives for the field trips" as stated in the lab manual (p. 36). The questions researchers ask, the specific topics on which researchers focus, the ways that researchers analyze data all are strongly influenced by the perspective they bring to their research, be it positivist, feminist, political economic, etc. For more background about theoretical lenses, see Lab Reading 4: Theoretical lenses in agri-food studies (p. 17). For Team Project 2 we are providing some guidance on topics and perspective to simplify your decision-making process.

Additionally, we want you to recognize that ethical and moral values are embedded in each of the theoretical lenses, and that many of these will overlap and/or conflict with your own values. While all research is informed by values at some level, researchers do not always explicitly state these, though this varies strongly by field and discipline. For many researchers, pursuit of new knowledge is a value that they hold deeply, and is often implicitly seen as sufficient justification for any research effort. Since the effects of changes in agriculture and food systems have important consequences for society and all of its members, and changes always benefit some while potentially harming others, it is important to reflect on, discuss, and make explicit values that influence research on food and agriculture.

Guideline 2: gathering primary data

Researchers distinguish between different types of information depending on how it is collected. Primary data refers to new information that is directly collected by the researcher — you! In social science, an example of a type of primary data collection is an interview with an individual in a position to provide information relevant to the research question. We will collect primary data mostly through interviewing the hosts of our off-campus field trip locations. Secondary data refers to published data that has been gathered by another individual or research organization. An example of secondary data often used in agri-food studies is the information available from the Census of Agriculture, created by the United States Department of Agriculture (for more details, see "A Brief Guide to Writing" in the lab manual). For this assignment we require you to be engaged in interviews with people who host us at our field trip locations. You are also encouraged to use secondary data to add to your primary data.

Guideline 3: explanation

Social science differs from natural science in that the objects of research (other people and their cultures, societies, etc.) are also “knowing subjects,” just like the researcher (see Lab Reading 5). In other words, humans hold internal meanings about their own behaviors, and these often differ from the meanings that others attribute to their actions (e.g., think of your interpretation of your actions when you leave dishes in the sink — “I’m in a hurry!”, versus the possible interpretation of a roommate — “that person is lazy”). Because of this difference in interpretation, the process of a social scientist studying human behavior and societies differs from a natural scientist studying the natural world in that the natural world does not create internally meaningful explanations for its workings, nor can it interpret the researchers’ actions. Humans that we research, however, certainly do both of these. Thus, interpretivist social scientists must distinguish between these internally created meanings and externally created meanings. Anthropologists call these *emic* and *etic* understandings. *Emic* descriptions are those that explain behaviors, beliefs, or phenomena in terms that are meaningful to the actor (in our case, the interviewee). *Etic* descriptions are those that explain behaviors, beliefs, or phenomena in terms that are meaningful to the researcher, usually with reference to a larger body of academic knowledge and theory. In this research project you must ask for people’s own explanations of their behaviors and situations, while also making your own interpretations. Thus, you are responsible for considering both *emic* and *etic* explanations.

Part 3: Creating research questions (to be done before Labs 4, 6, & 8)

During lab, we will allow time for team deliberation on research questions and interview questions. You will need to create these questions for each of the off-campus field trips (Field Trips 2 through 4). What you decide upon is not set in stone, but can be refined continuously with the consent of your teammates, and you can also improvise while at the field trip location, based on responses and what other teams ask.

Research questions are overarching questions that you want to answer with your inquiry. The research questions that you elaborate for each field trip should be created in the context of each specific section of the food system. For our purposes these sections are production, processing, distribution, retail, consumption, and disposal (see Figure 1). The research questions that you create should focus on our specific social unit of analysis, which are the unit(s) of social organization that we are examining at each location of our field trips. These social units can be farm businesses; farming and non-farming households; cooperatives; food processing, distributing, and retailing firms; nongovernmental organizations, etc.

An example of a research question within the context of the Coffee House (CoHo) could be: “What are the environmental impacts of the production processes for the foods purchased at the CoHo? More specifically, what percentage of their food is produced under organic or other ecological certification?”

Part 4: From research questions to interview questions (to be done before Labs 4, 6, & 8)

In most research projects involving interviews, the research questions must inform the creation of specific interview questions. The reason behind this is that interviewees rarely have the data available in a format that is required to answer the research questions directly. Instead, interview questions will need to generate small pieces of the data that can then be assembled by the researcher to answer the larger research question.

Your team’s research and interview questions for each field trip are due via SmartSite 24 hours before the field trip starts. These should be submitted by only one designated team member. The details below are meant to help you think through the process of creating research and interview questions. We will also do activities to facilitate the process in lab.

Examples from my own research

My field work in Costa Rica in 2003-2004 was aimed at answering a number of questions that I found interesting and that could produce information that would confirm, refute, or modify existing theories. One research question was, “How much pesticides (in terms of kilograms per hectare) are farmers using on their crops?” I decided that I wanted to try to quantify the amount of pesticide use among many farmers. Farmers there generally do not keep detailed records of their farming activities, so I had to interview them about their pesticide use. They also don’t keep a running tally of the quantity of pesticides that they’ve used in a growing season, but since they make pesticide use decisions every week, they have a pretty good knowledge of what they use and when. Thus, I decided that the best way forward was to ask about each of the specific pesticides they use, how frequently they use them on a specific crop, and the quantity they use on that crop each time they spray. This created interview questions including, “Which pesticides do you spray on potatoes?”, “How often do you spray pesticide X on potatoes?”, and “When you spray pesticide X on potatoes, how much do you use in a mixing tank?” I had to ask the last two questions about each specific pesticide. Using this data from the interviews, I was then able to add up the total pesticide use on a crop to answer the initial research question. This data is used and analyzed in some of my papers (Galt 2008a, 2008b).

Another research question I pursued in Costa Rica was, “How are Costa Rican export farmers affected by US food regulations?” In this case, I was able to gather qualitative data by asking some pretty direct interview questions, including “What are the requirements for exporting your produce to the US?”, “Did your farming practices change when you began growing for export?”, and, if they answered yes to the last question, “Tell me about how your growing practices changed.” The first question elicited their understandings of US market regulations, so that I could see if they considered them to be important. If they answered yes to the second question, my third question could allow me to find out how US regulations mattered to the farmer. The last two questions allowed me to see if farmers attributed changes in their production practices, including pesticide use, to growing for the US market. This data has also been used in my research papers (Galt 2007, 2009a).

A step-by-step guide to creating and executing research questions

Step 1: Exploration of interests

Think as a group about your interests about the locations we will be visiting on the next field trip. Think about specific characteristics of the location (urban farm, largest tomato processing plant in the world, a grocery cooperative, etc.) and social relationships that might exist there (such as between farmer and worker, between processor and distributor, etc.). What about these things is interesting? What more might you want to know about them? Record your interests and ideas as you brainstorm.

Step 2: Using your theoretical lens

Discuss your understandings of your theoretical lens, what it will mean to bring that lens to that location, and how you will try to use it to create information about the team’s interests. Answer the following questions, and record your ideas as you brainstorm.

- What are the research objects that are most important in this perspective?
- What are the important concepts used by the perspective?
- How might this perspective go about gathering information?

For example, as a researcher who adopted a political economy perspective for my work in Costa Rica, I prioritized understanding the way in which international markets were impacting farmers (see example above). As someone who also works in political ecology, I was also keenly interested in seeing how the climate of the area and farmer’s agroecosystem management affected their pesticide use. I have also adopted a feminist perspective in other work. With this lens I was interested in personal experience and emotions as they relate to values that

individuals and as members of society hold deeply (Galt 2009b).

Step 3: Using interests and theoretical lens to create the research questions

Create a research question that encompasses your team's interests and is informed by your team's theoretical lens. For example: "From where does household X purchase their food? More specifically, approximately what percentage of all of household X's food purchases comes directly from farmers?" In this example, the team's interest in "direct from farm produce," and their theoretical lens is "political economy" since they are interested in household economic decisions that support alternatives to the concentrated conventional food system. Both their personal interests and their assigned theoretical lens informed their choice of research questions.

Step 4: Writing the interview questions

After discussing how your team will collect data that answer the question, and keeping in mind that interviews must be used for some part of data collection, make more specific interview questions in order to gather the information that will answer your larger research question. Using the example from above, the team realizes that household members generally do not have accurate information in the format that the team wants. Thus, they come up with the following interview questions:

1. What are all of the places where your household buys food?
2. Do you purchase any food directly from farmers?
3. Approximately what percentage of your food expenditures go to food directly purchased from farmers per week?
4. Do you want to buy more food directly from farmers?
 - a. [if yes:] What obstacles do you face in doing this?
 - b. [if no:] Why not?

Part 5: Field work (done during Labs 4, 6, & 8)

Each team will interview our field trip hosts in each location by using the interview questions that they develop before lab. Be sure to take very good notes during the interview process so that you have a written record of the data that you can use for analysis.

Part 6: Data analysis and presentation (to be done before Labs 5, 7, & 9)

Once the interviews are completed, each team must then analyze the data that they have collected. Specific types of data analysis should be conducted with the suggestions and guidance of the TA. Data analysis will result in the creation of a team annotated presentation, meaning that your presentation must include detailed explanatory notes and will be presented to your lab section. Presentations will occur the week following each off-campus field trip (at the start of Labs 5, 7, & 9). The annotated presentation and handout should be turned in via SmartSite before the start of each of these labs.

Components (you will create each three times, one from each field trip)

1. Annotated presentation that lasts 15 minutes

Your presentation will present your research questions, methods, results, and provide an opportunity for a discussion of implications. Your presentation should be annotated, meaning that it should not only include the standard bullet points and pictures, but should also include more detailed explanatory notes. It should also be visually rich, not too text heavy, and logically organized. You will present this as a team to your lab section. There will be three presentations, one after each off-campus field trip.

As an example, I have placed the research presentation that I gave in 2007 when I interviewed at UC Davis in the <Resources/Team Project 2/Presentation example> folder on SmartSite (it is available as a PDF and as a PowerPoint and Keynote presentation). It is considerably longer

than yours will be, but I provide it as an example to illustrate three characteristics your presentations should have: (1) significant annotation in the form of notes to guide the presenter and provide more depth than should be shown on a slide, (2) visual richness, in which visuals are used to make important points and illustrate findings, and (3) an organization that is easy to follow and includes research questions, methods, results, and discussion.

Additionally, in the <Resources/Team Project 2/Presentation tips> folder I have placed Edward Tufte's (2003: 68-71) and Sam Walsh's (1998) guidelines on how to create and give effective presentations.

2. A handout for each member of your lab section

Create a single sheet (1- or 2-sided) handout for sharing your research with the other teams. It should be a summary of what you are presenting, but it should also be creative and interesting. Why should you produce a handout? Tufte (2003: 69) argues, "Handouts can show pictures, diagrams, data tables, research methods, references, names of people at the meeting, or the complete text of the paper outlined in your talk. Unlike evanescent projected images, permanent and portable paper has credibility. Paper serves as a testimonial record documenting your talk, letting your audience know that you take responsibility for what you say. People can file your handouts away and then come back in a month and ask, 'Didn't you say this?'" Your handout can also pose questions for group discussion, or questions for future research. It can also include additional data from secondary sources, photographs, or charts and tables. Your group is responsible for printing out enough copies for everyone in your lab and posting your handout on SmartSite prior to lab.

As an example of a handout, I've placed one that I created for a presentation in Geography 298 in the <Resources/Team Project 2/Handout example> folder.

Part 7: Food System Portfolio (to be done during Lab 9)

The last part of this assignment, done in Lab 9, requires you to take a look back over all of the research you have done up to this point for Team Project 2. Your task is to create synthesis by using systems thinking to think about the food system from farm to fork and back again. Systems thinking requires you to examine all of its parts, how they fit together, the boundaries of the system (where it ends and begins), and emergent properties.

With all of that in mind, write a 2- to 3-page team response to the following questions:

- What have you learned about your specific theoretical lens? What have you learned about theoretical lenses generally? Do you think it is possible to approach research without a starting place? Why or why not?
- What have you learned about the food system as a whole? How do the parts relate to the whole? Are there emergent properties of the whole system?
- Where should we draw boundaries around the food system? What considerations might influence the decision on where boundaries are drawn? What influence does the drawing of boundaries have on our understanding of the system?

Answers to these questions are due at the end of the in-lab activity, so make good use of your time. Your team's answers should be added to each of your presentations and handouts, converted into a PDF of the entire project, and turned in as a single portfolio document via SmartSite.

Cross-Team Project: Synthetic Understanding of One Section of the Food System

Your TA will facilitate the creation of cross-team groups (cross-teams) that will work together to create a synthetic understanding of each of the sections of the food system that we visited in Field Trips 2-4. Each cross-team will be in charge of one or two sections of the food system. In your cross-team, you will play the social role of a researcher who has invested time in understanding the food system through your team's particular theoretical lens. In other words, you will be your team's representative in the cross-team.

Your presentation should answer the following questions:

- To what extent are your cross-team's understandings, which were created through the three theoretical lenses, able to be synthesized (combined to form a single explanation) for a coherent view of the section of the food system?
- To what extent are your cross-team's understandings created through the three theoretical lenses incommensurable (impossible to compare because they have no common standard of measurement)?
- How might the tension between synthesis and incommensurability be reduced among a research team? Should it be reduced, or allowed to exist?

Your cross-team will have time in Lab 9 to deliberate, during which time you will create a 5-minute presentation for our class's last lecture session.

Important dates

Cross-team creation and work will occur in Lab 9. Your presentation will be given in our last lecture session.

Course grade

This assignment is worth 5% of your total course grade

Table 7: Understanding the use of systems thinking and synthesis in Team Project 2, the Cross-Team Project, and the Final Exam

Our inquiries are informed by overarching questions about ecological, economic, and social aspects of sustainability										
Lab #	Lab 4	Lab 5	Lab 6	Lab 7	Lab 8	Lab 9	Culmination			
Field trip #	Field Trip 2	—	Field Trip 3	—	Field Trip 4	—				
Food System Location	Farm	—	Processor Distribution & Retail	—	Consumption Disposal	—				
L E N S *	Team 1 - Political Economy	Team Presentations	Student 2	Team Presentations	Student 4	Team Presentations	Student 5	Food System Portfolio creation (turned in during Lab 9)		Food Systems Portfolio: Systems thinking by completing an analysis of the whole food system using the team's theoretical lens
	Team 2 - Feminism		Student 7		Student 9		Student 10			
	Team 3 - Positivism		Student 12		Student 14		Student 15			
Cross-Teams (by section of food system, formed in Lab 9)	Team "Farm" Students 1, 6, 11	Team "Processing" Students 2, 7, 12	Team "Distribution /Retail" Students 3, 8, 13	Team "Consumption" Students 4, 9, 14	Team "Disposal" Students 5, 10, 15					
Culmination	In Lab 9, each cross-team creates Cross-Team Project: Synthetic Understanding of One Section of the Food System (presentation given in lecture, Dec. 3)					Cross-Team Project: Possibilities of synthesis and incommensurability are assessed by each cross-team in a specific section of the food system				
Final Exam Question: students perform synthesis of perspective for the whole food systems										

*These lenses, or perspectives, are informed by specific philosophical components: ontological foundations, epistemologies, assumptions, values, etc. See Lab Reading 3.

Our inquiries are informed by overarching questions about ecological, economic, and social aspects of sustainability										
Lab #	Lab 4	Lab 5	Lab 6	Lab 7	Lab 8	Lab 9	Culmination			
<p>NOTE: This version of the table shows the kind of thinking in each portion of the assignments</p>										
Field trip #	Field Trip 2	—	Field Trip 3	—	Field Trip 4	—				
Food System Location	Farm	—	Processor Distribution & Retail	—	Consumption Disposal	—				
L E N S *	Team 1 - Political Economy	Team Presentations	Student 2	Team Presentations	Student 4	Team Presentations	Student 5	Food System Portfolio creation (turned in during Lab 9)		Food Systems Portfolio: Systems thinking by completing an analysis of the whole food system using the team's theoretical lens
	Team 2 - Feminism		Student 7		Student 9		Student 10			
	Team 3 - Positivism		Student 12		Student 14		Student 15			
Cross-Teams (by section of food system, formed in Lab 9)	Team "Farm" students 1, 6, 11	Team "Processing" Students 2, 7, 12	Team "Distribution /Retail" Students 3, 8, 13	Team "Consumption" Students 4, 9, 14	Team "Disposal" Students 5, 10, 15					
Culmination	In Lab 9, each cross-team creates Cross-Team Project: Synthetic Understanding of One Section of the Food System (presentation given in lecture, Dec. 3)					Cross-Team Project: Possibilities of synthesis and incommensurability are assessed by each cross-team in a specific section of the food system				
Final Exam Question: students perform synthesis of perspective for the whole food systems										

V. Lab Activities

Our time in lab will revolve around Team Projects and examining field trip locations. Labs 1 through 3 deal mostly with Team Project 1, which focuses on the on-campus food system. Labs 4 through 9 involve Team Project 2, which focuses on the various sections of the larger off-campus food system that found in Davis, Yolo County, and their immediate surroundings. Both Team Projects use the same inquiry process in which each team creates research questions and then uses primary sources — the hosts of our location visits — to answer their research questions.

Guiding objectives for field trips

NOTE: these are also located on the last page of the manual for easy reference.

We will be visiting many locations in which the activities of different types of social units — farm businesses; households; cooperatives; food industry firms; government institutions and non-governmental organizations; etc. — take place. In some places these social units' activities will be overlapping and interacting. We suggest that the following general objectives should guide our attempts to understand the various individuals and social units we are researching. Please keep these in mind and use the list as a starting point when preparing your research and interview questions for field work. During field trips we seek to:

- Explore the **philosophy, goals, and values** of the social unit, and its members
- Observe and describe the production, processing, distribution, consumption, and/or disposing **practices** of the social unit
- Assess the **economic results** of the activity of these social units, including whether they meet the economic objectives of its constituent members
- Evaluate the potential **environmental impacts** of current production and/or consumption practices of the social unit
- Examine the **social relationships** that exist within the unit, and the interactions of the social unit with other social groups (such as workers, families, etc.)
- Practice interpersonal and team communication **skills**

A note about this lab manual as a tool

This manual asks you to hand write responses to questions, take notes, and complete assignments directly in the manual. These writings are meant to facilitate your learning process in lab. You will not be graded on penmanship, spelling, grammar, or punctuation. However, your TA will confirm that you have completed the assignments within the lab manual as part of your lab participation grade.

Lab 1 Activities

Lab 1 — Introduction to Lab, Team Project 1, & First Location of Field Trip 1

PREPARATION

Bring your field trip equipment

Review Lecture 2 readings and read “Overview: Justification, Expectations, & Background” section of lab manual

Use the space below for any questions and thoughts that arise from reading the lab manual.

Lab 1 Activities

Assignment: Visual-Auditory-Kinesthetic (VAK) Learning Style Assessment

Read each statement below carefully. To the left of each statement, write the number that best describes how each statement applies to you by using the following guide:

1	2	3	4	5
Almost Never Applies	Applies Once in a While	Sometimes Applies	Often Applies	Almost Always Applies

Answer honestly, as there are no correct or incorrect answers. It is best if you do not think about each question too long, as this could lead you to the wrong conclusion. Once you have completed all 36 statements (12 statements in three sections), total your score in the spaces provided. This activity is from Donald Clark (1998).

Section One - Visual

- _____ 1. I take lots of notes and I like to doodle.
- _____ 2. When talking to someone else I have the hardest time handling those who do not maintain good eye contact with me.
- _____ 3. I make lists and notes because I remember things better if I write them down.
- _____ 4. When reading a novel I pay a lot of attention to passages picturing the clothing, description, scenery, setting, etc.
- _____ 5. I need to write down directions so that I may remember them.
- _____ 6. I need to see the person I am talking to in order in order to keep my attention focused on the subject.
- _____ 7. When meeting a person for the first time I notice the style of dress, visual characteristics, and neatness first.
- _____ 8. When I am at a party, one of the things I love to do is stand back and "people-watch."
- _____ 9. When recalling information I can see it in my mind and remember where I saw it.
- _____ 10. If I had to explain a new procedure or technique, I would prefer to write it out.
- _____ 11. With free time I am most likely to watch television or read.
- _____ 12. If my boss has a message for me, I am most comfortable when she sends a memo.

Total For Visual _____ (note: the minimum is 12 and maximum is 60)

Section Two - Auditory

- _____ 1. When I read, I read out loud or move my lips to hear the words in my head.
- _____ 2. When talking to someone else I have the hardest time handling those who do not talk back with me.
- _____ 3. I do not take a lot of notes but I still remember what was said. Taking notes distracts me from the speaker.
- _____ 4. When reading a novel I pay a lot of attention to passages involving conversations, talking, speaking, dialogues, etc.
- _____ 5. I like to talk to myself when solving a problem or writing.
- _____ 6. I can understand what a speaker says, even if I am not focused on the speaker.

Lab 1 Activities

- _____ 7. I remember things easier by repeating them again and again.
- _____ 8. When I am at a party, one of the things I love to do is talk in-depth about a subject that is important to me with a good conversationalist.
- _____ 9. I would rather receive information from the radio, rather than a newspaper.
- _____ 10. If I had to explain a new procedure or technique, I would prefer telling about it.
- _____ 11. With free time I am most likely to listen to music.
- _____ 12. If my boss has a message for me, I am most comfortable when she calls on the phone.
- Total For Auditory _____ (note: the minimum is 12 and maximum is 60)**

Section Three - Kinesthetic

- _____ 1. I am not good at reading or listening to directions. I would rather just start working on the task or project at hand.
- _____ 2. When talking to someone else I have the hardest time handling those who do not show any kind of emotional support.
- _____ 3. I take notes and doodle but I rarely go back a look at them.
- _____ 4. When reading a novel I pay a lot of attention to passages revealing feelings, moods, action, drama, etc.
- _____ 5. When I am reading, I move my lips.
- _____ 6. I will exchange words and places and use my hands a lot when I can't remember the right thing to say.
- _____ 7. My desk appears disorganized.
- _____ 8. When I am at a party, one of the things I love to do is enjoy the activities such as dancing, games, and totally losing myself in the action.
- _____ 9. I like to move around. I feel trapped when seated at a meeting or a desk.
- _____ 10. If I had to explain a new procedure or technique, I would prefer actually demonstrating it.
- _____ 11. With free time I am most likely to exercise.
- _____ 12. If my boss has a message for me, I am most comfortable when she talks to me in person.
- Total For Kinesthetic _____ (note: the minimum is 12 and maximum is 60)**

Tallying Procedures

Total each section and place the sum in the blocks below:

VISUAL	AUDITORY	KINESTHETIC
number of points: _____	number of points: _____	number of points: _____

NOTE: you will likely learn best by using ALL three styles, rather than just your preferred learning style.

.....
IN-LAB ACTIVITIES

Agenda

1. Activity: Learning styles group-activity
2. Assignment: Learning styles reflection & sharing with class
3. TA mini-lecture: Introduce learning goals for lab & learner document
4. TA mini-lecture: Introduce Team Project 1 and Field Trip 1 (on-campus field trip)
5. Discussion: Field trip logistics for Field Trips 2 through 4
6. Field Trip 1: Rapid Campus Appraisal: Part 1 (Student Farm)

Details

1. Activity: Learning styles group-activity

Everyone in the lab stands in the assigned section of her or his learning style. This enables the lab as a whole to demonstrate the relative distribution of peoples' differing learning styles.

Activity Details

The floor has a spatially organized diagram with tape marking different areas that represent the Visual, Auditory, and Kinesthetic learning styles. Follow your TA's instructions regarding where to stand based on your preferred learning style.

2. Assignment: Learning styles reflection & sharing with class

STEP 1:

Following the activity, reflect and write for 5 minutes on experiences in school or elsewhere that have illustrated a learning style preference of your own and someone you know. Write 1-2 sentences per question.

Can you see any patterns when looking at the history of your learning experiences? Have you tended to favor one learning style over another? If so, describe the experiences, patterns, and learning style preference.

Can you recall an example of a learning style preference demonstrated by someone in your family or a friend? If so, describe their learning style.

Lab 1 Activities

STEP 2:

Share your experiences and thoughts with the class. Take notes on what other students share.

STEP 3:

Reflect and write for 5 minutes on the implications of having a diversity of learning styles within your class and lab section by answering the following questions.

How might this diversity be a *challenge* to your learning goals, as an individual in the class?

How might this diversity be a *challenge* for the class, in terms of learning as a group?

How might this diversity be an *opportunity* for your learning goals, as an individual in the class?

How might this diversity be an *opportunity* for the class, in terms of learning as a group?

STEP 4:

Share your thoughts about the challenges and opportunities with the class. Take notes on what other students share.

Lab 1 Activities

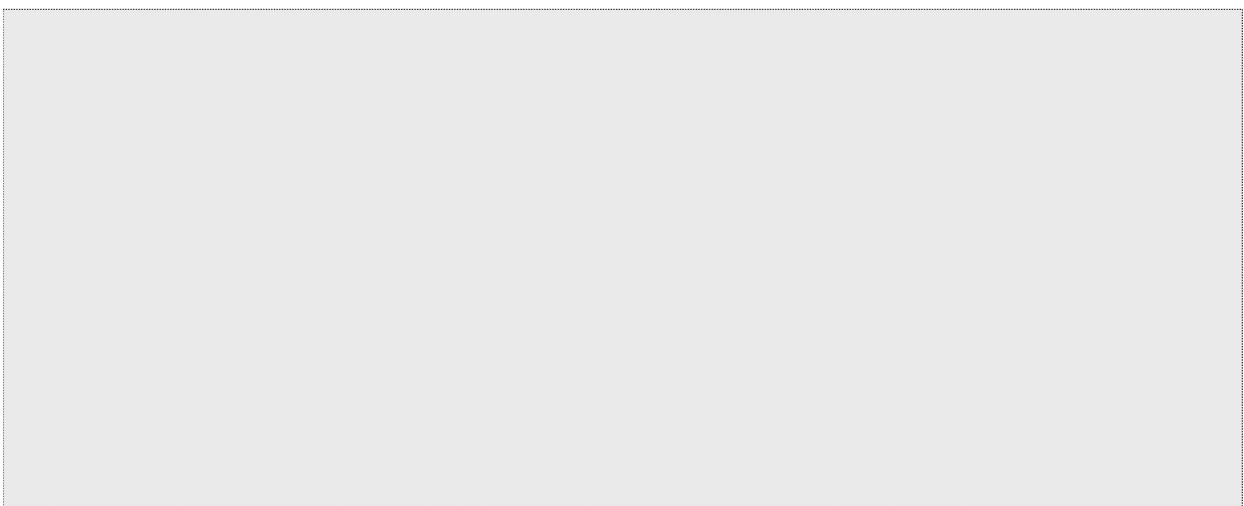
3. TA mini-lecture: Introduce learning goals for lab & learner document



4. TA mini-lecture: Introduce Team Project 1 and Field Trip 1 (on-campus field trip)



5. Discussion: field trip logistics for Field Trips 2 through 4



Lab 1 Activities

6. Field Trip 1: Rapid Campus Appraisal: Part 1 (Student Farm)

We will enter the field and begin observing the current situation on campus, on the ground. For the remainder of Lab 1 we will go to Location 1, the Student Farm. We will continue this on-campus field trip for Lab 2, which will meet directly at the first field trip location. The lab will travel by bike or golf cart and visit many of the following locations: Segundo Dining Commons, ASUCD Coffee House, the Meat Lab, the Silo, and the on-campus Farmers Market.

Staff at each of these locations will give a tour of their operation, and, if time allows, may address the following questions that they have been provided ahead of time:

- What might sustainability mean in the context of your operation?
- Are there any environmental or social criteria currently in use for measuring the sustainability of your operation? (e.g., waste recycling, energy efficiency, water quality, product quality, profitability, worker safety, price supports, employee benefits, etc.)
- If your operation is interested in becoming more sustainable, where do you see progress being made?
- Where are you facing the most challenges, limitations, or barriers to becoming more sustainable?

Use the following space to take notes on each location we visit. Notes can include questions, responses, observations, new terms, points of confusion, hand sketches, etc. Feel free to take photos, but be sure to do so in a respectful manner.

Date:

Location 1:

Interviewee:

Notes on Location 1, continued

Lab 2 Activities

Lab 2 — Field Trip 1, continued: Rapid Campus Appraisal

PREPARATION

Bring your field trip equipment and your bicycle
Meet at the first field trip location.

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IN-LAB ACTIVITIES

Agenda

1. Field Trip 1: Rapid Campus Appraisal, Part 2
2. Team Project 1, Part 2: Team creation, location selection, and research questions

Details

1. Field Trip 1: Rapid Campus Appraisal, Part 2

Locations for today include many of the following locations: Segundo Dining Commons, ASUCD Coffee House, the Meat Lab, the Silo, and the on-campus Farmers Market. Your TA will let you know the exact locations of the trip.

Use the following space to take notes on each location we visit. Notes can include questions, responses, observations, new terms, points of confusion, hand sketches, etc. Feel free to take photos, but be sure to do so in a respectful manner.

Date:

Location 2:

Interviewee:

Lab 2 Activities

Location 3:

Interviewee:

Lab 2 Activities

Location 4:

Interviewee:

Location 5:

Interviewee:

Lab 2 Activities

2. Team Project 1, Part 2: Team creation, location selection, and research questions

At the conclusion of Lab 2's on-campus field trip, teams will be announced by your TA. Immediately after the trip, each team meets and is required to identify one location and one to three research questions about that food system location that they want to answer. The teams are responsible for reporting their research question and location to your TA before the end of the lab session. This will allow your TA to provide feedback.

Just as chemists prepare for laboratory time by understanding the processes and theories that they want to use and test, social scientists need to prepare for our fieldwork by creating answerable research questions. Once we enter the field, everything we see, hear, and experience becomes data. Because interviews are a real-time situation, social scientists need to be prepared by (1) being ready with thoughtful interview questions that can help answer the research question(s), (2) anticipating potential responses and ways of asking follow-up questions once interviewees respond, and (3) being prepared to record the experience (either digitally, and/or by notes, photos, etc.) as data to be analyzed later.

*STEP 1: Brainstorm about questions through the view of your **theoretical lens** (10 minutes)*

This step has two parts. First, using your theoretical lens, brainstorm individually and write down ideas for about 2 minutes using sticky notes. Write each idea on a separate sticky note. You are encouraged to think adventurously and there are no stupid questions.

For the second part, as a team share your ideas, one by one, by reading them aloud. At this point, avoid making judgments or comments about the ideas generated. Next, using your theoretical lens, discuss and refine the existing questions with your teammates and add new ones to new sticky notes based on discussion. This should take about 8 minutes.

*STEP 2: Brainstorm questions based on your **values and interests** (10 minutes)*

Repeat the above process, but use your own values and interests as the starting point for brainstorming and discussion.

*Step 3: Brainstorm questions based on the **goals of the field trips** (see p. 36, 10 minutes)*

Repeat the above process, but use the goals of the field trip as the starting point for brainstorming and discussion.

Step 4: As a team, process and organize your large stack of sticky notes into research and interview questions (10 minutes)

Combine all of your team's sticky notes and organize them by groupings. In organizing, address all of these questions: Are there any questions that overlap and/or that can be combined? Can any exact duplicates be removed? Which questions fit under other questions, i.e., are any questions a subset of a larger question? How might they be organized in terms of an outline or hierarchy? Can they be grouped into three or fewer larger, overarching research questions or categories?

For Team Project 1, we advise you to create questions that are asked in a way that they have a good chance of being answered. For example, if students want to ask whether the meat they purchase at the Coffee House was raised hormone free (see Glossary), the team might only have enough time to examine the details of one kind of meat product offered. If students want to find out about fair trade products (see Glossary) at Segundo Dining Commons, then it might be possible to only examine one or two food types, like bananas or coffee. In Team Project 1, we are focusing on practicing the entire cycle of inquiry, rather than going deep into a particular topic or location.

Once you are done, you should have one to three overarching research questions, and a number

Lab 2 Activities

of possible interview questions. Use the space provided to write down your final research questions and the interview questions that you will use during your field work for Team Project 1 in Lab 3. Write one additional copy of your research and interview questions to hand into your TA at the end of lab. (Optional: take a photo of your finished product for your own records.)

Team Project 1 *research* questions:

Team Project 1 *interview* questions. Be sure to leave plenty of space between them so that you can take note of the interviewee's response. You will use this in Lab 3.

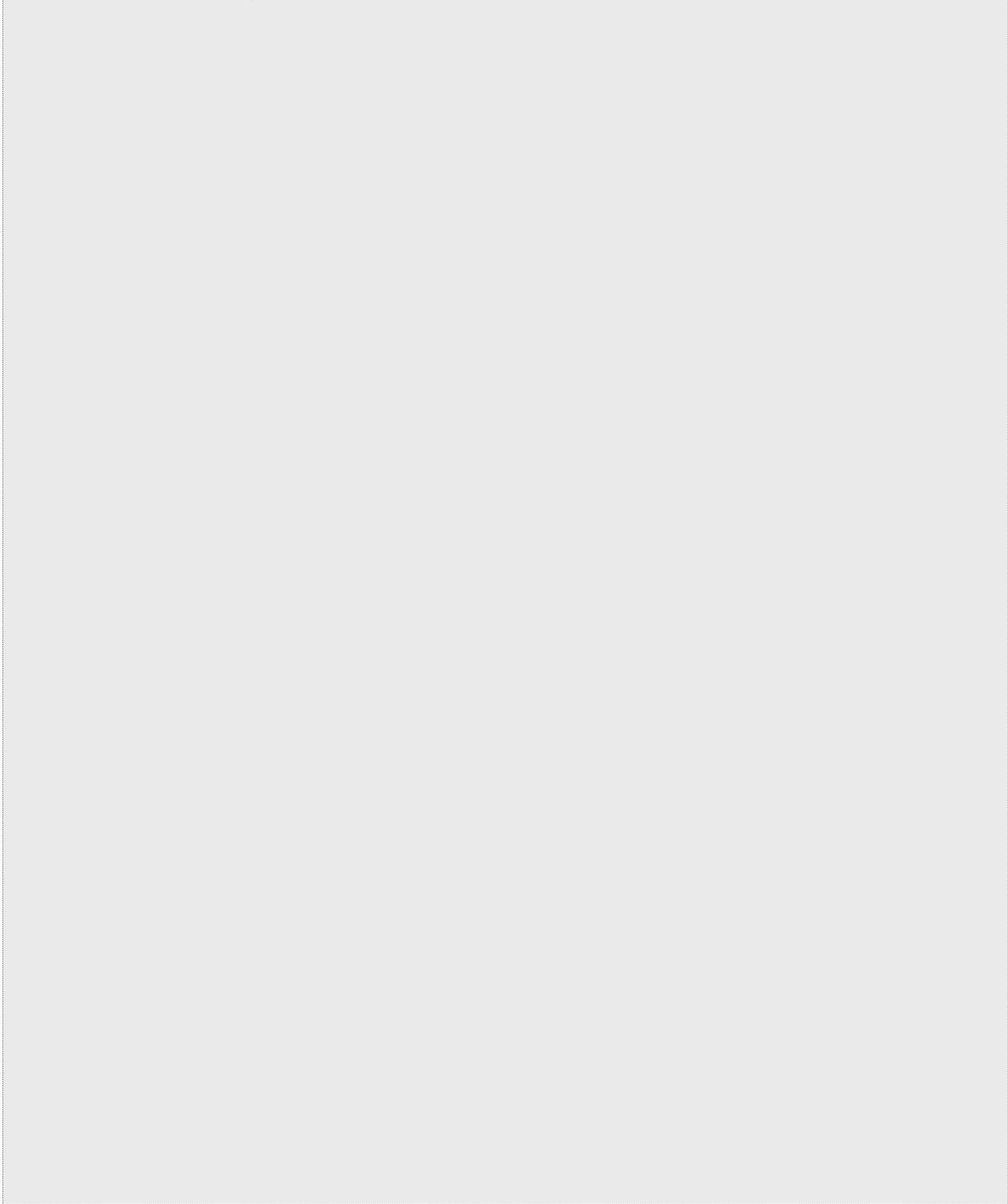
Lab 2 Activities

Team Project 1 *interview* questions, continued. Be sure to leave plenty of space between them so that you can take note of the interviewee's response. You will use this in Lab 3.

Lab 3 — Complete Team Project 1 & Introduce Team Project 2 & Field Trip 2

PREPARATION

Read Lab Readings 1 through 5 and be prepared for discussion
Use the space below for your questions and thoughts on the readings.



Lab 3 Activities

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IN-LAB ACTIVITIES

Agenda

1. Team Project 1, Part 3: Discuss & rehearse field work protocol
2. Team Project 1, Part 4: Collect data through field work
3. Team Project 1, Part 5: Work on and give brief report-out on field work
4. TA mini-lecture: Introduce Team Project 2
5. TA + Team 1 mini-lecture: Introduce Field Trip 2
6. Team Project 2: Creating research and interview questions for Field Trip 2

Details

1. Team Project 1, Part 3: Discuss & rehearse field work protocol

STEP 1:

As a team, review your research and interview questions (formulated in the previous lab).

STEP 2:

As a team you need to familiarize yourselves with the fieldwork method of interviewing. We want you to visit with the host(s), ask them a few questions, and take careful notes. To help you prepare ahead of time, the TA will present a basic outline of how to approach an interviewee and what steps to take to get the most out of it.

2. Team Project 1, Part 4: Collect data through field work

STEP 1:

You have 15 minutes to get to your selected on-campus fieldwork locations. Once on location, you have about 45 minutes to approach the host, answer your questions and conduct any additional data collection. Do not panic if your questions are unanswerable within the time allowed. You only need to give your best effort to do an excellent job in this activity. Your grade does not depend on the correctness of your answers, but on the effort of your questioning.

Take notes on the last pages of Lab 2 activities to capture the interviewee's responses to each of your interview questions. Your notes only need to be readable to you. This is your record of your meeting with the host and is for your personal use in discussions with your team and reporting to your lab section.

3. Team Project 1, Part 5: Work on and give brief report-out on field work

STEP 1:

Teams will return to the lab room to work on a casual report-out on the experience. Describe below your experience of what worked and what didn't work in looking for answers to your questions. What happened when you asked your interviewee your questions? These notes will help you with your report-out.

Lab 3 Activities

STEP 2:

As a team, decide how you will present the experience and findings of your fieldwork. You can choose to have everyone speak, only some, or just one person. Your team presentation must be very brief, about 5 minutes in length.

In your team presentation spend one-third of the time speaking about the research question and location you selected, and why you selected them; one-third of the time describing the team's research experience, especially asking the interviewee the questions; and one-third of the time discussing your findings, as well as what you were unable to answer.

Use the space below to record the outline for your presentation.

1. Research question and location:

2. Experience while researching:

3. Findings, if any:

Lab 3 Activities

Use the space below to take notes on the presentation of the other teams. What did you learn from their experiences?

1. Research question and location:

2. Experience while researching:

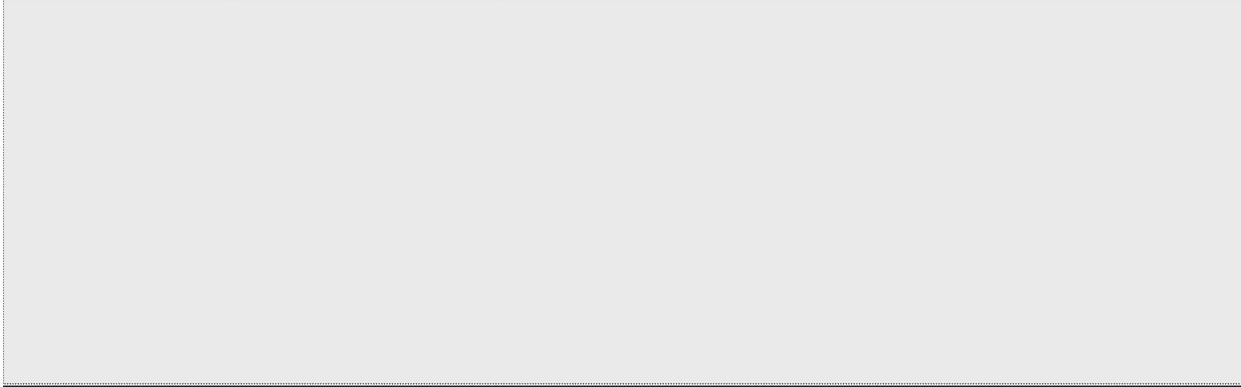
3. Findings, if any:

1. Research question and location:

2. Experience while researching:

3. Findings, if any:

4. TA mini-lecture: Introduce Team Project 2



5. TA + Team 1 mini-lecture: Introduce Field Trip 2



6. Team Project 2: Creating research and interview questions for Field Trip 2

*STEP 1: Brainstorm about questions through the view of your **theoretical lens** (10 minutes)*

This step has two parts. First, using your theoretical lens, brainstorm individually and write down ideas for about 2 minutes using sticky notes. Write each idea on a separate sticky note. You are encouraged to think adventurously and there are no stupid questions.

For the second part, as a team share your ideas, one by one, by reading them aloud. At this point, avoid making judgments or comments about the ideas generated. Next, using your theoretical lens, discuss and refine the existing questions with your teammates and add new ones to new sticky notes based on discussion. This should take about 8 minutes.

*STEP 2: Brainstorm questions based on your **values and interests** (10 minutes)*

Repeat the above process, but use your own values and interests as the starting point for brainstorming and discussion.

*Step 3: Brainstorm questions based on the **goals of the field trips** (see p. 36, 10 minutes)*

Repeat the above process, but use the goals of the field trip as the starting point for brainstorming and discussion.

Step 4: As a team, process and organize your large stack of sticky notes into research and interview questions (10 minutes)

Combine all of your team's sticky notes and organizes them by groupings. In organizing,

Lab 3 Activities

address all of these questions: Are there any questions that overlap and/or that can be combined? Can any exact duplicates be removed? Which questions fit under other questions, i.e., are any questions a subset of a larger questions? How might they be organized in terms of an outline or hierarchy? Can they be grouped into three or fewer larger, overarching research questions or categories?

Once you are done, you should have one to three overarching research questions, and a number of possible interview questions. Use the space provided to write down your final research questions and the interview questions that you will use during your field work for Field Trip 2. Write one additional copy of your research and interview questions to hand into your TA at the end of lab. (Optional: take a photo of your finished product for your own records.)

Team Project 2 *research* questions for Field Trip 2:

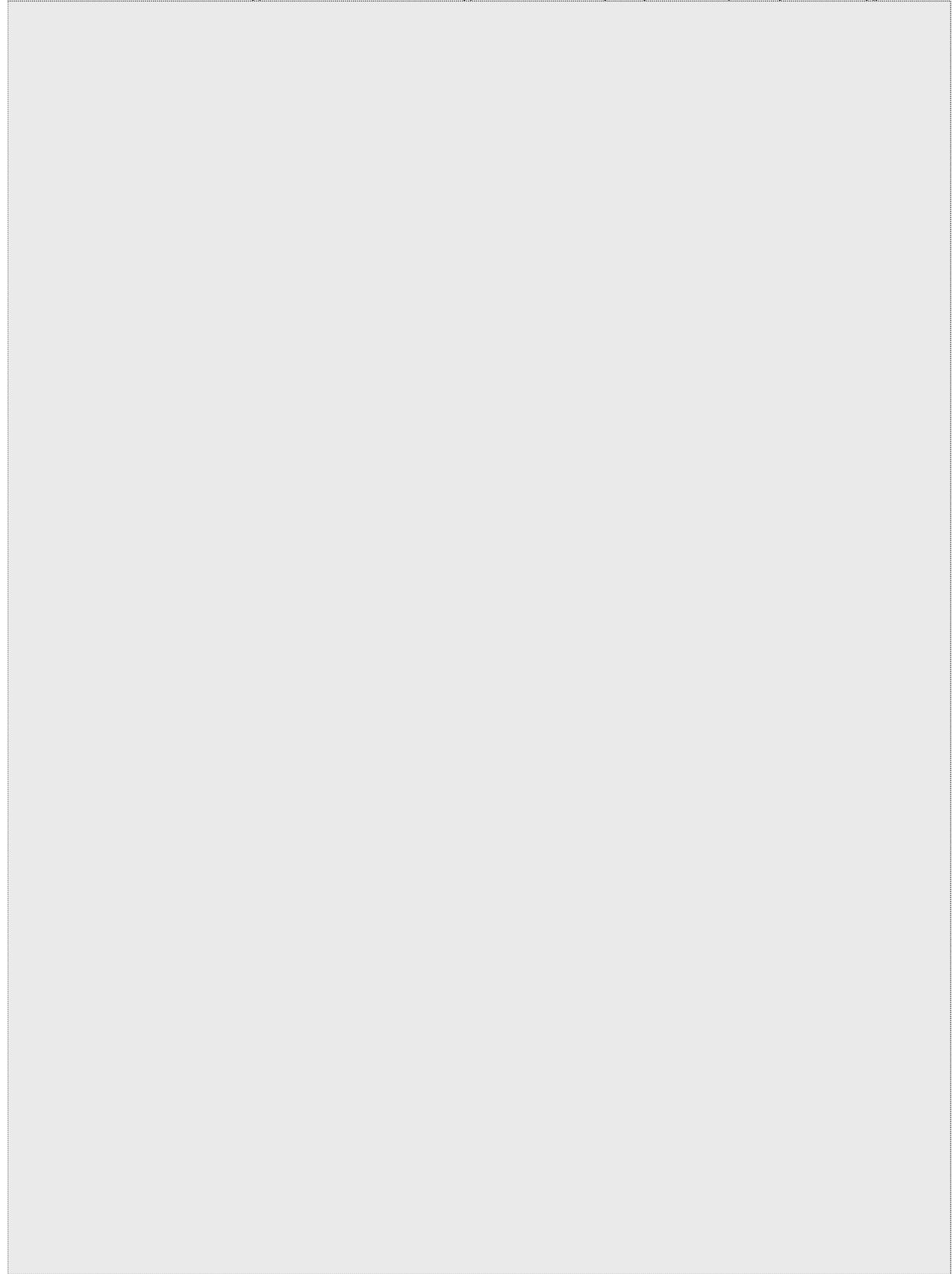
Team Project 2 *interview* questions for Field Trip 2. Be sure to leave plenty of space between them so that you can take note of the interviewee's response. You will use this in Lab 4.

Lab 3 Activities

Team Project 2 *interview* questions for Field Trip 2, continued. Be sure to leave plenty of space between them so that you can take note of the interviewee's response. You will use this in Lab 4.

Lab 3 Activities

7. Discussion: Lab Readings 1-5 + lecture readings on research perspectives (time permitting)



Lab 4 — Field Trip 2: Farming

PREPARATION

Bring your field trip equipment

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IN-LAB ACTIVITIES

Agenda

- 1. Field Trip 2: Farming

Details

- 1. Field Trip 2: Farming

You will use the interview questions you developed in Lab 3. In addition to taking notes about the interviewee’s response to your team’s questions, use this page and the next to take additional notes, including the other team’s questions, the interviewee’s response, and your observations of the locations. Feel free to take photos, but be sure to do so in a respectful manner.

Date:

Location 1:

Interviewee:

Lab 4 Activities

Date:

Location 2:

Interviewee:

Lab 5 — Debriefing from Field Trip 2 & Introduction to Field Trip 3

PREPARATION

Prepare Team Project 2 Report Out on Field Trip 2
See Team Project 2 assignment.

Upload your Team Project 2 presentation and handout to SmartSite before lab

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IN-LAB ACTIVITIES

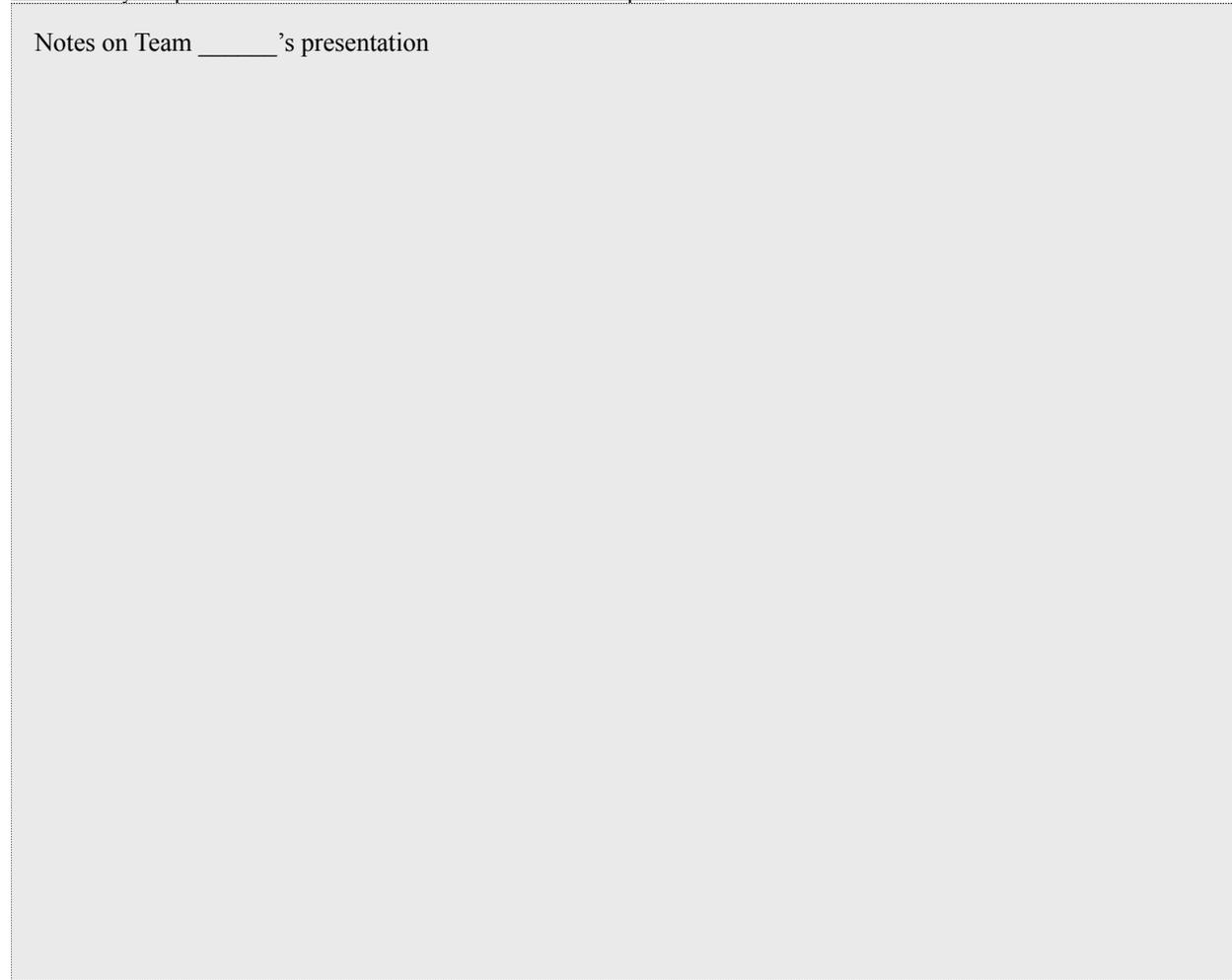
Agenda

1. Activity: report-out from each team on Field Trip 2
2. TA + Team 2 mini-lecture: Introduce Field Trip 3
3. Team Project 2: Create questions for Field Trip 3
4. Discussion: Lab Readings 6-7 + lecture readings

Details

1. Activity: report-out from each team on Field Trip 2

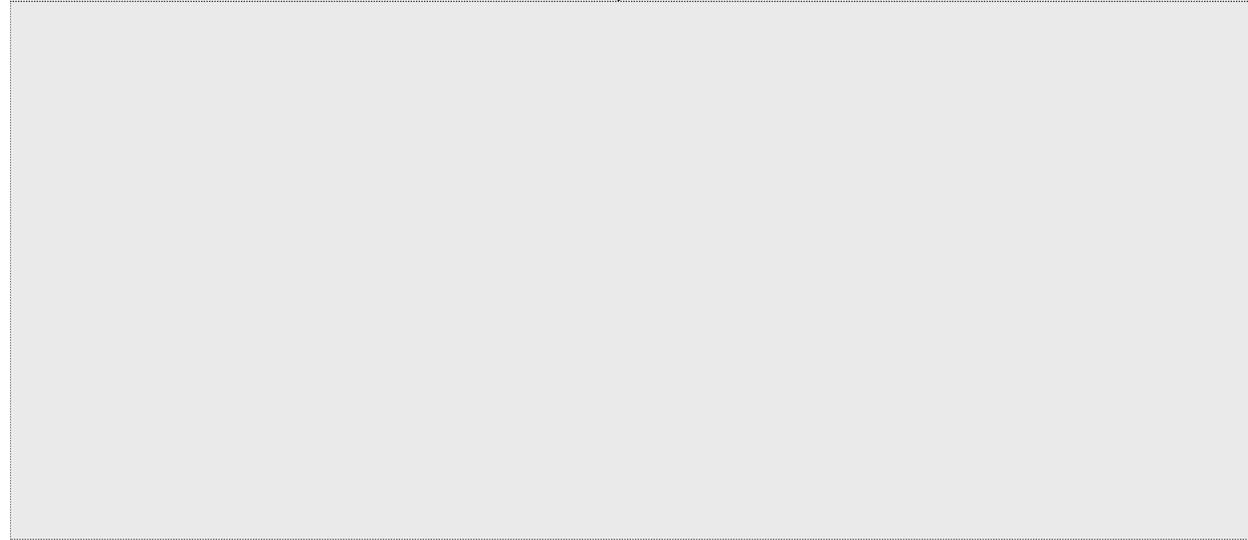
Notes on Team _____'s presentation



Lab 5 Activities

Notes on Team _____'s presentation

2. TA + Team 2 mini-lecture: Introduce Field Trip 3



3. Team Project 2: Create questions for Field Trip 3

*STEP 1: Brainstorm about questions through the view of your **theoretical lens** (10 minutes)*

This step has two parts. First, using your theoretical lens, brainstorm individually and write down ideas for about 2 minutes using sticky notes. Write each idea on a separate sticky note. You are encouraged to think adventurously and there are no stupid questions.

For the second part, as a team share your ideas, one by one, by reading them aloud. At this point, avoid making judgments or comments about the ideas generated. Next, using your theoretical lens, discuss and refine the existing questions with your teammates and add new ones to new sticky notes based on discussion. This should take about 8 minutes.

*STEP 2: Brainstorm questions based on your **values and interests** (10 minutes)*

Repeat the above process, but use your own values and interests as the starting point for brainstorming and discussion.

*Step 3: Brainstorm questions based on the **goals of the field trips** (see p. 36, 10 minutes)*

Repeat the above process, but use the goals of the field trip as the starting point for brainstorming and discussion.

Step 4: As a team, process and organize your large stack of sticky notes into research and interview questions (10 minutes)

Combine all of your team's sticky notes and organizes them by groupings. In organizing, address all of these questions: Are there any questions that overlap and/or that can be combined? Can any exact duplicates be removed? Which questions fit under other questions, i.e., are any questions a subset of a larger questions? How might they be organized in terms of an outline or hierarchy? Can they be grouped into three or fewer larger, overarching research questions or categories?

Once you are done, you should have one to three overarching research questions, and a number of possible interview questions. Use the space provided to write down your final research questions and the interview questions that you will use during your field work for Field Trip 3. Write one additional copy of your research and interview questions to hand into your TA at the end of lab. (Optional: take a photo of your finished product for your own records.)

Lab 5 Activities

Team Project 2 *research* questions for Field Trip 3:

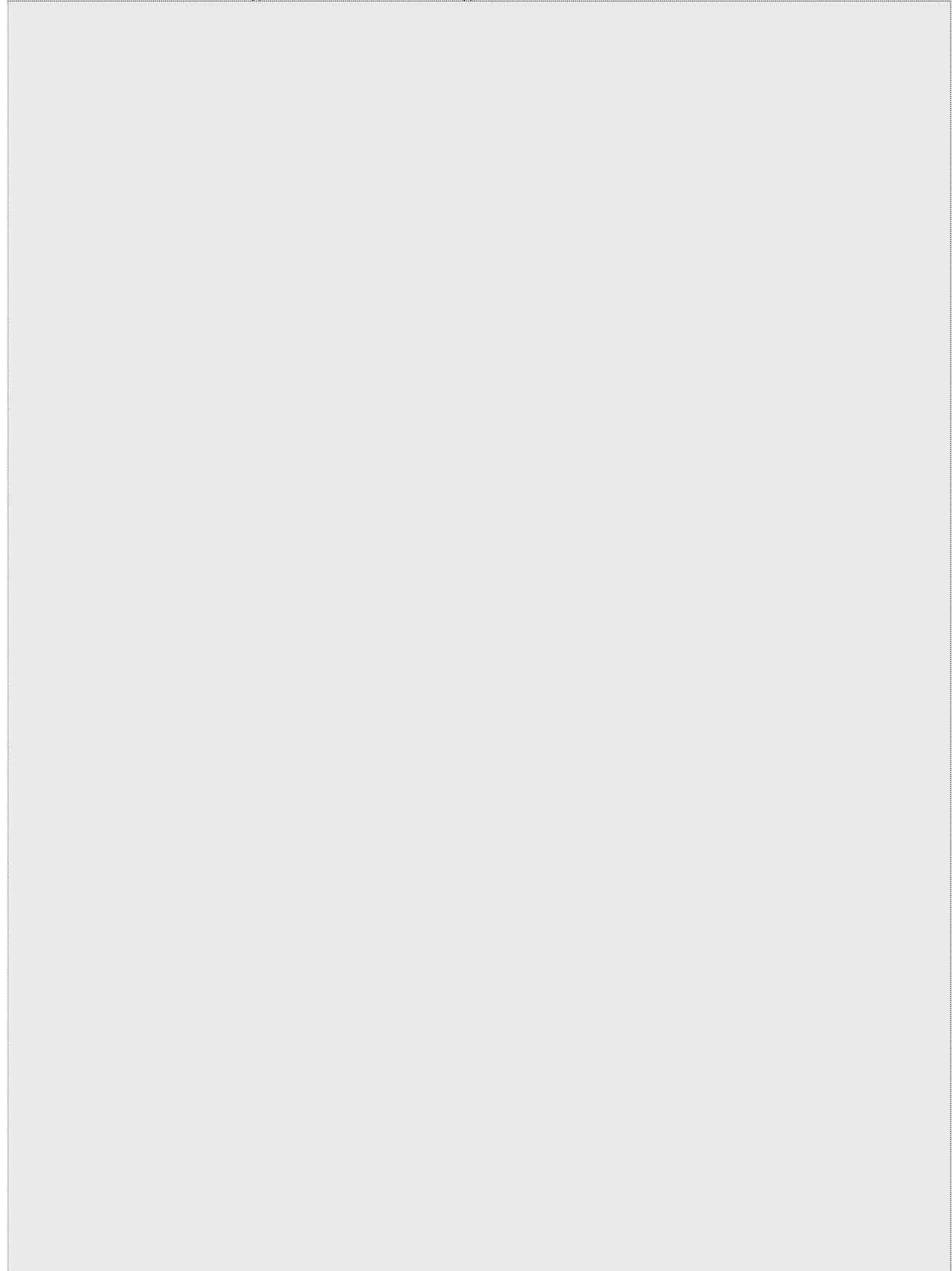
Team Project 2 *interview* questions for Field Trip 3. Be sure to leave plenty of space between them so that you can take note of the interviewee's response. You will use this in Lab 6.

Lab 5 Activities

Team Project 2 *interview* questions for Field Trip 3, continued. Be sure to leave plenty of space between them so that you can take note of the interviewee's response. You will use this in Lab 6.

Lab 5 Activities

4. Discussion: Lab Readings 6-7 + lecture readings



Lab 6 — Field Trip 3: Food Industry (Processing, Distribution, & Retail)

PREPARATION

Bring your field trip equipment

.....
IN-LAB ACTIVITIES

Agenda

1. Field Trip 3: Food Industry (Processing, Distribution, & Retail)

Details

1. Field Trip 3: Food Industry (Processing, Distribution, & Retail)

You will use the interview questions you developed in Lab 5. In addition to taking notes about the interviewee’s response to your team’s questions, use this page and the next to take additional notes, including the other team’s questions, the interviewee’s response, and your observations of the locations. Feel free to take photos, but be sure to do so in a respectful manner.

Date:

Location 1:

Interviewee:

Lab 6 Activities

Date:

Location 2:

Interviewee:

Lab 7 — Debriefing from Field Trip 3 & Introduction to Field Trip 4

PREPARATION

Prepare Team Project 2 Report Out on Field Trip 3
See Team Project 2 assignment.

Upload your Team Project 2 presentation and handout to SmartSite before lab

.....
IN-LAB ACTIVITIES

Agenda

1. Activity: report-out from each team on Field Trip 3
2. TA + Team 3 mini-lecture: Introduce Field Trip 4
3. Team Project 2: Create questions for Field Trip 4
4. Discussion: Lab Readings 8-10 + lecture readings

Details

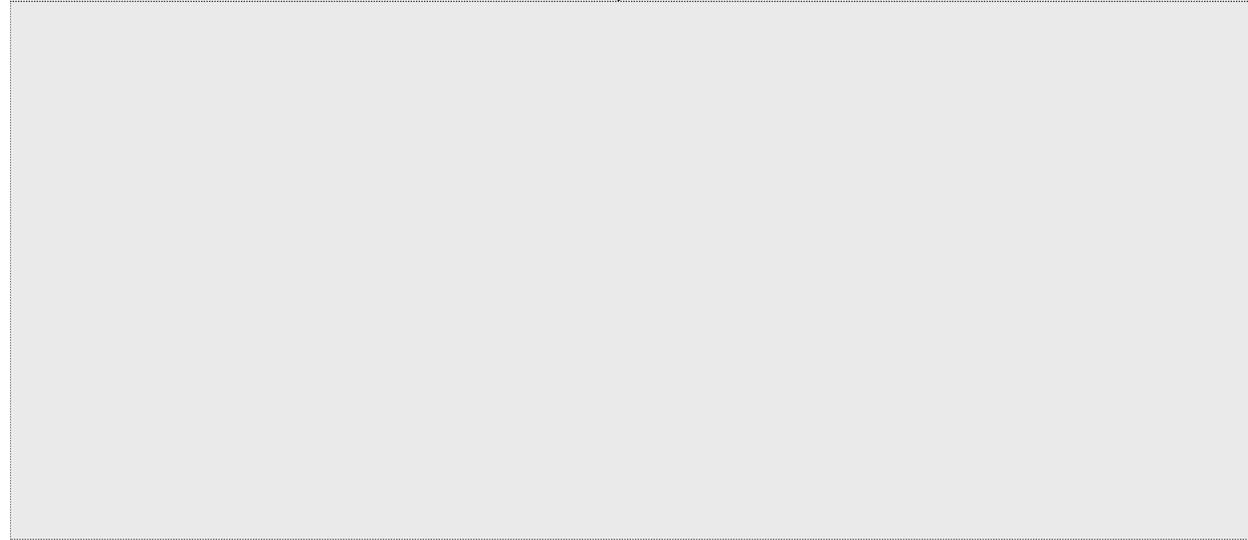
1. Activity: report-out from each team on Field Trip 3

Notes on Team _____'s presentation

Lab 7 Activities

Notes on Team _____'s presentation

2. TA + Team 3 mini-lecture: Introduce Field Trip 4



3. Team Project 2: Create questions for Field Trip 4

*STEP 1: Brainstorm about questions through the view of your **theoretical lens** (10 minutes)*

This step has two parts. First, using your theoretical lens, brainstorm individually and write down ideas for about 2 minutes using sticky notes. Write each idea on a separate sticky note. You are encouraged to think adventurously and there are no stupid questions.

For the second part, as a team share your ideas, one by one, by reading them aloud. At this point, avoid making judgments or comments about the ideas generated. Next, using your theoretical lens, discuss and refine the existing questions with your teammates and add new ones to new sticky notes based on discussion. This should take about 8 minutes.

*STEP 2: Brainstorm questions based on your **values and interests** (10 minutes)*

Repeat the above process, but use your own values and interests as the starting point for brainstorming and discussion.

*Step 3: Brainstorm questions based on the **goals of the field trips** (see p. 36, 10 minutes)*

Repeat the above process, but use the goals of the field trip as the starting point for brainstorming and discussion.

Step 4: As a team, process and organize your large stack of sticky notes into research and interview questions (10 minutes)

Combine all of your team's sticky notes and organizes them by groupings. In organizing, address all of these questions: Are there any questions that overlap and/or that can be combined? Can any exact duplicates be removed? Which questions fit under other questions, i.e., are any questions a subset of a larger questions? How might they be organized in terms of an outline or hierarchy? Can they be grouped into three or fewer larger, overarching research questions or categories?

Once you are done, you should have one to three overarching research questions, and a number of possible interview questions. Use the space provided to write down your final research questions and the interview questions that you will use during your field work for Field Trip 4. Write one additional copy of your research and interview questions to hand into your TA at the end of lab. (Optional: take a photo of your finished product for your own records.)

Lab 7 Activities

Team Project 2 *research* questions for Field Trip 4:

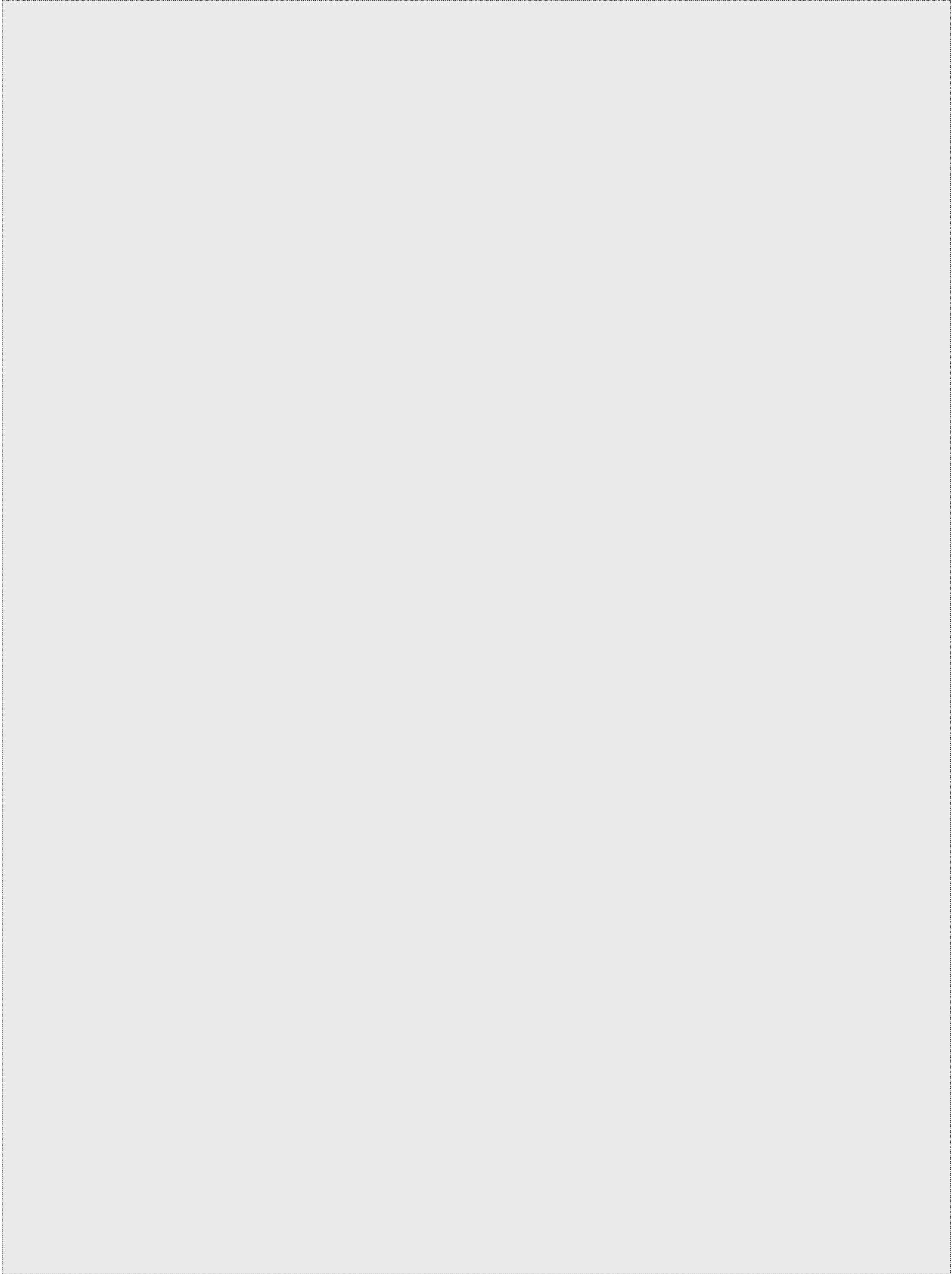
Team Project 2 *interview* questions for Field Trip 4. Be sure to leave plenty of space between them so that you can take note of the interviewee's response. You will use this in Lab 8.

Lab 7 Activities

Team Project 2 *interview* questions for Field Trip 4, continued. Be sure to leave plenty of space between them so that you can take note of the interviewee's response. You will use this in Lab 8.

Lab 7 Activities

4. Discussion: Lab Readings 8-10 + lecture readings (time permitting)



Lab 8 — Field Trip 4: Food Consumption & Disposal

PREPARATION

Bring your field trip equipment

.....
IN-LAB ACTIVITIES

Agenda

1. Field Trip 4: Food Consumption & Disposal

Details

1. Field Trip 4: Food Consumption & Disposal

You will use the interview questions you developed in Lab 7. In addition to taking notes about the interviewee’s response to your team’s questions, use this page and the next to take additional notes, including the other team’s questions, the interviewee’s response, and your observations of the locations. Feel free to take photos, but be sure to do so in a respectful manner.

Date:

Location 1:

Interviewee:

Lab 8 Activities

Date:

Location 2:

Interviewee:

Lab 9 — The Food System: Systems Thinking & Synthesis of Research Perspectives

PREPARATION

Prepare Team Project 2 Report Out on Field Trip 4
See Team Project 2 assignment.

Upload your Team Project 2 presentation and handout to SmartSite before lab

Bring a laptop if you have one for use with the Cross-Team Project

.....
IN-LAB ACTIVITIES

Agenda

1. Activity: report-out from each team on Field Trip 4

Details

1. Activity: report-out from each team on Field Trip 4

Notes on Team _____'s presentation

Lab 9 Activities

Notes on Team _____'s presentation

Lab 9 Activities

2. Team Project 2: answer systems questions and compile Team Project 2 portfolio

For you team's Team Project 2 Food System Portfolio (see Part 7 of the assignment, p. 33), your task is to create synthesis by using systems thinking to think about the food system from farm to fork and back again. Systems thinking requires you to examine all of its parts, how they fit together, emergent properties, and the boundaries of the system (where it ends and begins). Your team's two page answer and portfolio is due as a PDF via SmartSite 90 minutes into Lab 9.

With all of that in mind, write a 2- to 3-page team response to the following questions:

- What have you learned about your specific theoretical lens? What have you learned about theoretical lenses generally? Do you think it is possible to approach research without a starting place? Why or why not?
- What have you learned about the food system as a whole? How do the parts relate to the whole? Are there emergent properties of the whole system?
- Where should we draw boundaries around the food system? What considerations might influence the decision on where boundaries are drawn? What influence does the drawing of boundaries have on our understanding of the system?

The order of materials in your Team Project 2 Food System Portfolio should be:

- Presentation 1 (printed with notes)
- Handout 1
- Presentation 2 (printed with notes)
- Handout 2
- Presentation 3 (printed with notes)
- Handout 3
- Systems analysis of the food system from your theoretical lens (2 pages)

3. Cross-Team Project: Synthetic Understanding of One Section of the Food System

Your TA will facilitate the creation of cross-team groups. Your cross-team will work together to create a synthetic analysis of each of the sections of the food system that we visited in Field Trips 2-4. Teams will include: Team "Farming," Team "Processing," Team "Distribution/Retail," Team "Consumption," and Team "Disposal." Some may be combined, depending on the number of students.

You have the remainder of lab to create a 5-minute presentation that will be presented to the whole class and guests during our last lecture, Dec. 3 (see p. 34 for assignment details). Time outside of lab may be used to prepare for the presentation, but we expect that the remainder of lab will be sufficient.

VI. A Brief Guide to Sources and Citation

Primary Sources

During our field trips you will meet and interview many people who work in some part of the food system. For research purposes, we call these people *primary sources*. They provide us with *primary data*, which is information that is unfiltered and not yet analyzed by another researcher, although as people they themselves already have filtered and analyzed this information. That people are our research objects — but also knowing subjects — makes the social sciences different from the natural sciences (see Reading 4).

Secondary Sources

Secondary sources refer to sources that provide *secondary data*, or information that has been created and/or analyzed by other researchers. This can include data sets from publicly available databases, published scholarly articles, newspaper and magazine articles, documentary films, etc. To locate secondary data, Web of Science (WoS), Scopus, and Google Scholar are powerful, general search engines with different capabilities.

WoS is available through the UC Davis library system: <http://isiknowledge.com/wos>.

Scopus is available through the UC Davis library system: <http://www.scopus.com/>.

Google Scholar is available to the public: <http://scholar.google.com/>.

The Next-Generation Melvyl Pilot is an impressive system with many articles as part of its database. It also is available through the UC Davis library: <http://ucdavis.worldcat.org/>.

The UC Davis library subject guides are also extremely useful. You can use them to find databases specific to various fields of knowledge, including geography, sociology, agriculture, food and nutrition, etc. Each subject has a subject librarian at UC Davis, whose contact information is at the bottom of the subject guide page: <http://www.lib.ucdavis.edu/ul/research/subjects/index.php>.

Agri-food studies is not confined to one discipline, so there is no one core journal.

However, below I've listed some important scholarly journals that contain important articles:

- Agriculture and Human Values
- Agriculture, Ecosystems, and Environment
- American Journal of Agricultural Economics
- Annals of the Association of American Geographers
- Community Development Journal
- Culture and Agriculture
- Economic Geography
- Environment and Planning A, and D
- Food Policy
- Geoforum
- Human Ecology
- Human Organization
- Journal of Peasant Studies
- Journal of Political Ecology
- Journal of Renewable Agriculture and Food Systems
- Journal of Rural Studies
- Rural Sociology
- Sociologia Ruralis
- Transactions of the Institute of British Geographers

Here is a list of all journals available electronically at UC Davis: <http://www.lib.ucdavis.edu/ul/research/ejournals/>.

Citing Sources

For all of your work in this class we ask that you use in-text, parenthetical citations as done in this lab manual, and as described in the course syllabus. Below are two further examples of correctly cited ideas that you can use as models for you papers and essays:

- Agriculture based on agroecological principles is a viable alternative to industrial agriculture (Altieri 1995).
- Altieri (1995) writes that agriculture based on agroecological principles is a viable alternative to industrial agriculture.

When you cite a very specific idea, a number, or you use a quotation, include the page number in the in-text citation. Below are two correct examples using the same quote:

- Castree (2005: 8) notes, “One common definition of nature is that it is the non-human world.”
- “One common definition of nature is that it is the non-human world” (Castree 2005: 8). See also the class syllabus on citing, paraphrasing, and quoting.

Works Cited Page

Your works cited page (also called References) should be in alphabetical order with all sources listed together (i.e., not separated by type of source or any other kind of divisions). You can use the References section of this lab manual and the syllabus as models. Additionally, the following list provides the format for specific examples by the type of source to help you put together your works cited page(s).

Books

Altieri, Miguel A. 1995. *Agroecology: The science of sustainable agriculture*. Boulder: Westview Press.

Book Chapters

Allen, Tim F.H. 1998. “The landscape ‘level’ is dead: persuading the family to take it off the respirator.” In *Ecological scale: theory and applications*, edited by D. L. Peterson, and V. T. Parker, pp. 35-54. New York: Columbia University Press.

Citing Citations in Secondary Sources

Often authors will cite information, including quotations, numbers, dates, figures, etc., from another source. If you want to use that material, it is best to search for the original source (this is one of the reasons that we cite!). If it is not available to you, use an in-text parenthetical citation such as the following: (Smith 2000: 18, cited in Jones 2003: 209). In this case, you only need to put the source you are directly citing (Jones) in your References page, using the formatting detailed in this section depending on the type of source it is.

Interviews

Ramming, Robert. 2008. Interview during Field Trip 2, 12 October. Woodland, California.

Lecture

Galt, Ryan E. 2009. CRD 20 Lecture “How have globalization and concentration affected the food system?” 15 October. UC Davis.

Journal Articles

Ahenkorah, Yaw, G.S. Akrofi, and A.K. Adri. 1974. “The end of the first cocoa shade and manurial experiment at the Cocoa Research Institute of Ghana.” *Journal of Horticultural Science* 49 (1):

Sources and Citation

43-51.

Newspaper Articles

Cabrera, Luis. 2001. "Some social activists decry groups' success with seals of approval." *Chicago Tribune*, 28 January 2001, 10.

Internet Sources

Lutz, Karen. 1997. Pesticides applied to potatoes, Wisconsin, 1995. Accessed 4 May 2001: <http://www.pmac.net/wfwpvga/wisc95.htm>.

VII. Glossary

Carbon footprint - a measure of “environmental impact, measured in units of carbon dioxide emitted. A person’s carbon footprint would include the amount of CO₂ emissions that result from home energy consumption and transportation, as well as emissions generated by the production, distribution, and eventual waste breakdown of the products a person uses. In the food industry, many businesses are using the carbon footprint measure as a tool for understanding and maximizing the potential for supply chain efficiency. The Environmental Protection Agency (EPA) and similar agencies internationally offer ‘emissions calculators’ for quantifying carbon footprints” (Karp et al. n.d.: 22).

Certification - “a verification of a claim made by a food producer (farmer, processor, or manufacturer). A certifying agency sets and enforces standards on food and production processes to ensure that claims and labels are legitimate and meaningful. Certifications focus on social, environmental or economic sustainability objectives; some certifications set standards that combine these categories, while others focus on one category. Certifications may be second party, in which a company verifies a producer’s claim, or third party, in which an independent organization sets standards for certification. Third party certifiers are considered the most objective and thus credible certifiers. The London-based International Social and Environmental Accreditation and Labeling Alliance (ISEAL) is an international association of leading standard-setting and conformity assessment organizations that focus on social and environmental issues, and works as a clearinghouse of sorts for global certification programs” (Karp et al. n.d.: 23).

Commodity - an economic good: as **a** : a product of agriculture or mining **b** : an article of commerce especially when delivered for shipment <*commodities* futures> **c** : a mass-produced unspecialized product <*commodity* chemicals> (Miriam-Webster 2009).

Community Supported Agriculture (CSA) - “a partnership between a farmer and a group of consumers in which consumers pay in advance of the growing season for “shares” in the harvest. Shareholders provide the CSA farmer with a stable income and market, absorbing some of the financial risks inherent in farming. In exchange, shareholders receive weekly deliveries of assorted farm products” (Karp et al. n.d.: 23).

Country of Origin Labeling (COOL) - “a process that would require retailers to label where products come from, including beef, lamb, pork, fish and shellfish, fresh and frozen fruits and vegetables, and peanuts. Although signed into law several years ago, this has not yet been made mandatory in the U.S.. As the law is currently written, COOL would not require that value-added and processed foods be labeled. COOL is expected to increase food product traceability in the event of a food safety concern” (Karp et al. n.d.: 23).

Emic - of, relating to, or involving analysis of cultural phenomena from the perspective of one who participates in the culture being studied (Miriam-Webster 2009).

Epistemology - the branch of philosophy that deals with the theory of knowledge, or how we know what we know (See Lab Reading 3).

Ethical sourcing - sometimes called ethical trade, “an approach to food-chain management and generally refers to a company’s strategy for taking responsibility for social, environmental, and labor practices across its supply chain. Most often, the company setting the standards implements and audits adherence to these standards. In some cases, multiple stakeholders work together as stewards of a company’s ethical sourcing standards” (Karp et al. n.d.: 23-24).

Etic - of, relating to, or involving analysis of cultural phenomena from the perspective of one who does not participate in the culture being studied (Miriam-Webster 2009).

Fair trade - “a broad movement toward standards that seek to ensure equitable international trade and fair partnerships between producers and buyers, reduce small farms’ vulnerability, and improve producers’ quality of life. The term ‘Fair Trade Certified’ is a third party certification by the non-profit organization TransFair USA, the only United States-based third party certifier of fair trade products. The term ‘Fairtrade’ describes the standards and certifications overseen by the Fairtrade Labeling Organizations (FLO) International, an umbrella organization representing Fair Trade labeling initiatives in 20 countries, including the United States (through TransFair USA), 13 European countries, Canada, Japan, Australia and New Zealand” (Karp et al. n.d.: 24).

Family farms - USDA defines family farms as farms that “are not operated by a hired manager and not owned by an outside corporation, and small farms are those with less than \$250,000 in annual gross receipts and on which management and labor are provided by the farm family. Mid-scale farms, sometimes called agriculture of the middle, are farms that are too small to compete in bulk commodity markets and too large to efficiently market products directly to consumers. None of these terms are currently certified” (Karp et al. n.d.: 24).

Farm raised - “[w]hile the term farm raised does not specify the scale or production processes of the farm, it is meant to evoke a small farm, as opposed to a highly intensive industrial or factory farm. The term is not certified by any group or agency. Farmed raised also refers to the commercial raising of fish in tanks or enclosures, primarily for human consumption. Fish farming is a principal form of aquaculture and offers an alternative, if sometimes controversial, solution to the increasing market demand for fish and fish protein” (Karp et al. n.d.: 24).

Food miles - “refers to the distance food travels from farm to consumer. Food miles translate into carbon dioxide emissions, but the food miles measure does not take into account carbon emissions from food production (agricultural or processing) or the varying amounts of carbon emissions in air and ground transportation. There is currently no certifying or labeling agency for food miles claims” (Karp et al. n.d.: 24-25).

Food safety - “refers to the steps taken by consumers, producers, processors, scientists, and government agencies to minimize food-borne pathogens or contaminants, whether accidental or intentional (e.g. agroterrorism or bioterrorism). A variety of federal agencies oversee different aspects of food safety, including the Food and Drug Administration, the USDA, and the Department of Homeland Security. Food safety also includes accuracy in labeling and packaging as well as product traceability in the event of a recall or food-related health concern” (Karp et al. n.d.: 25).

Food security - USDA defines it as “access by all people at all times to enough food for an active and healthy life. Food Stamps and School Lunches are both federal programs designed to support and ensure food security. Food security can also be thought of on a community level and with broader parameters. In a food secure community, all residents would have uninterrupted access to safe, affordable, culturally appropriate, nutrient-rich, sustainably produced and fairly traded foods” (Karp et al. n.d.: 25).

Free range - “[w]hile the terms free range and free roaming imply that animals raised for meat or eggs are not caged (cage free) and are free to roam, the USDA defines free range poultry as that which has had access to the outdoors. The degree and quality of access are not specified. The term’s use on beef and eggs is undefined and unregulated. For poultry, meats and eggs, the terms pasture raised and grass fed suggest that animal was raised by grass grazing. More commonly, animals are fattened on grain in feedlots or confined animal feeding operations (CAFO). Many advocacy groups consider animals that are pasture raised, a term which is not certified, to be humanely raised. Humanely raised animals receive diets without antibiotics or hormones, and are raised with shelter, resting areas, and sufficient space to engage in natural animal behaviors. Humanely raised claims are certified by the Humane Farm Animal Care Program. None of these terms are currently certified” (Karp et al. n.d.: 25).

Freegan - a person who employs an alternative strategy for living based on limited participation in the conventional economy and minimal consumption of resources. It is a play on the words “free” and “vegan.” (Freegan.info 2009).

Genetically Modified Organism (GMO) - “a plant or animal altered by genetic engineering, in which biologists transfer genetic traits across and between plant and animal species. While it is legal for farmers in many countries (including the U.S. and Argentina) to grow GMO crops for human and animal consumption, other countries (Japan and many European nations) have banned the growing and importing of GMOs until more is known about their safety and environmental impacts. Labeling products that include GMOs is not required in the U.S.. The terms GMO-free or no GMOs mean that the product contains no genetically modified ingredients. While no agency certifies this claim, food that is certified organic cannot contain GMOs” (Karp et al. n.d.: 26).

Heirloom - plant varieties or animal types “distinguished by their unusual shapes, colors, tastes, and textures. Many common market varieties in the U.S. are hybrids, bred for consistency of appearance, extended shelf life, plant disease resistance, or extensive processing or transport. An heirloom plant variety or seed is one which has never been hybridized and can therefore be grown “true to type” for many generations, enabling growers to save seeds from a parent plant to sow the following year. Heirloom foods are sometimes also known as heritage foods, though this term is most often applied to purebred or rare animal breeds” (Karp et al. n.d.: 26).

Hormone free - the phrase, along with *no hormones administered*, or *no synthetic hormones*, implies “that an animal was raised without the use of artificial growth hormones. The most commonly used hormones in production are Recombinant Bovine Growth Hormone (rGBH) and Recombinant Bovine Somatotropin (rBST), which promote animal growth and increase milk production. As the USDA prohibits hormone administration for pigs or poultry, a hormone free label on those products is not particularly meaningful. While the USDA can hold companies accountable for making a hormone free claim on beef and dairy products, no independent agency certifies it” (Karp

et al. n.d.: 26).

Integrated Pest Management (IPM) - “an approach to pest control that minimizes synthetic pesticide applications by emphasizing natural pest control methods. Practices include strategic combinations of crop rotation, crop planning according to pest life cycles, strategic timing of pesticide applications, use of pest-resistant plants, and constant field monitoring and response. Pesticides are used in small quantities and as a last resort. While responsible pest management is part of the Fair Trade and Food Alliance labels, IPM is not currently certified by any agency” (Karp et al. n.d.: 27).

Knowing subject - observer/knower/researcher (also called the subject or the knowing-subject) (see Lab Reading 5).

Local - food “produced and/or processed as close as possible to where it is consumed. There is no agreed upon standard distance that constitutes ‘local.’ Some define it in terms of a set number of miles, while others choose to think of local foods on a regional basis, prioritizing proximity rather than creating a definition that imposes mileage limits. Purchasing locally grown foods is valued as a means of supporting local farm businesses, farmland, and rural economies, and of providing consumers with fresh, flavorful foods harvested at peak ripeness” (Karp et al. n.d.: 27).

Locavore - one who eats foods grown locally whenever possible (Miriam-Webster 2009).

Methodology –the branch of philosophy concerned with the logic of scientific inquiry, i.e., “the science and study of methods and the assumptions about the ways in which knowledge is produced” (Grix 2002: 179). It asks, “how can we go about acquiring the knowledge we want?” (see Lab Reading 3).

Methods - “techniques or procedures used to collate and analyse data” (Blaikie 2000: 8, cited in Grix 2002: 179, see Lab Reading 3).

Monoculture - “refers to the modern agricultural practice of devoting large spans of land to growing a single crop. This practice arose with the mechanization of planting and harvesting and was designed to increase farm yields and production efficiencies. While it often succeeds in that in the short term, monoculture is considered by many to be unsustainable in the long term and has been blamed for reduced ecological diversity on farms, increased crop susceptibility to pests and disease, increased need for synthetic fertilizers and pesticides, and soil depletion and erosion” (Karp et al. n.d.: 27).

Natural - “USDA describes natural poultry and meat products as those that are minimally processed and do not contain artificial or synthetic colors, flavors, preservatives, or ingredients. No official definition or standards exist for this term, except in the categories of meat and poultry. No organization certifies this claim” (Karp et al. n.d.: 27).

Ontology - the branch of philosophy that deals with what exists and how entities are to be grouped and divided by similarities and differences. Ontology is the answer to the question: “what kinds of things are there in the world?” (Benton and Craib 2001: 4, see Lab Reading 3).

Organic - “Food that is labeled organic in the United States must be certified by a USDA accredited agency, whether it was grown domestically or imported. USDA organic standards dictate that organic foods be grown without most synthetic fertilizers and pesticides, sewage sludge, genetically modified seeds, or irradiation. Feed for organic meat and poultry is grown organically and does not contain animal byproducts. Animals raised for organic food products must have access to the outdoors, including pasture for ruminants, and cannot be treated with hormones or antibiotics. The USDA offers different logos and claims for processed foods, depending on the percentage of organic ingredients included. Internationally, the International Federation of Organic Agriculture Movements (IFOAM)—a United Nations Food and Agriculture Organization accredited organization— seeks to promote organic production and increase international uniformity in organic standards” (Karp et al. n.d.: 28).

Primary sources - information sources from which we ourselves collect the information, such as with interviews, focus groups, and questionnaires (see Lab Reading 3).

Seasonal - “refers to the window of time when a given food is freshest, ripest, and most abundant. An agricultural growing season is the period of the year during which crops are grown. A growing season is generally measured by the number of days between the spring’s last frost and the winter’s first frost. Geographic location, climate, daylight hours, average temperatures, rainfall, and water resources also contribute to defining a region’s growing season and determining what can be grown. In culinary terms, seasonal refers to an approach to menu planning in which recipes are built around a geographic region’s harvest calendar. Seasonal eating does not require eating only what is available locally. For example, while figs cannot be grown in New England, a chef there might choose to build a recipe around figs in the summer, figs’ peak harvest time in California” (Karp et al. n.d.: 28-29).

Secondary sources - information sources that have been gathered by others, including historical documents, texts, and survey data from surveys conducted by other researchers (see Lab Reading 3).

Sources - refers to the sources of information from which data is collected (see Lab Reading 3).

Sustainability - “refers to the ability to meet the needs of the world’s current human population without compromising future generations’ ability to provide for themselves. A common, broadly-framed working definition of a sustainable food system is one which produces enough food to feed people affordably, nutritionally, and safely in a way that sustains the economic, environmental, and social systems in which the food system is embedded” (Karp et al. n.d.: 29).

Sustainable Agriculture - “integrates productive agriculture, biodiversity conservation, animal welfare and human development. The USDA defines sustainable agriculture as “an integrated system of plant and animal production” that satisfies human food and fiber needs, enhances environmental quality and natural resources, sustains the economic viability of farm operations, and enhances farmers’ and society as a whole’s quality of life. Current systems of third party sustainable agriculture certification include Rainforest Alliance, which certifies sustainably produced products in South and Central America, Africa, and Asia, including coffee, tea, cocoa, bananas, ferns, and cut flowers; and the Oregon-based Food Alliance, which certifies United States-produced foods crops to a broad sustainability standard” (Karp et al. n.d.: 29).

Sustainable Seafood - “[s]ustainable seafood refers to fish or shellfish caught or farmed in a manner that does not risk the species’ future or harm the environment. Factors that influence

seafood sustainability include overfishing; “by-catch” (species that are caught in the harvest process other than the targeted catch); and the environmentally destructive impacts of trawl nets, fish farming pollution, and the escape of genetically altered species from controlled farms into the wild. Currently, the most commonly used sustainable seafood criteria are those of the London-based Marine Stewardship Council (MSC) which oversees sustainable fishery certifications as well as a labeling system for over 850 seafood products. Other key resources in this field include the Monterey Bay Aquarium’s Seafood WATCH program and the World Wildlife Fund-initiated Aquaculture Dialogues (Karp et al. n.d.: 29-30).

Trans Fat - the Food and Drug Administration (FDA) states that “trans fats are created when manufacturers hydrogenate vegetable oil to transform it into a solid fat and to increase shelf life and flavor stability. Artificial trans fats have no health benefits and have been shown to contribute to heart disease by increasing LDL (“bad”) and decreasing HDL (“good”) cholesterol. A small amount of trans fat occurs naturally in some foods, but the majority of trans fat exposure comes through foods made with or fried in hydrogenated oils. Naturally occurring trans fats are not considered as hazardous as their artificial counterparts. Like saturated fats, they can be part of a balanced diet if eaten in moderation. Since January 1, 2006, the FDA has required that trans fats be listed on food nutrition labels” (Karp et al. n.d.: 30).

Vegan - a strict vegetarian who consumes no animal or dairy products; also : one who abstains from using animal products, such as leather (Miriam-Webster 2009).

VIII. References

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IX. Quick Reference: Guiding Objectives for Field Trips

During field trips we seek to:

- Explore the **philosophy, goals, and values** of the social unit, and its members
- Observe and describe the production, processing, distribution, consumption, and/or disposing **practices** of the social unit
- Assess the **economic results** of the activity of these social units, including whether they meet the economic objectives of its constituent members
- Evaluate the potential **environmental impacts** of current production and/or consumption practices of the social unit
- Examine the **social relationships** that exist within the unit, and the interactions of the social unit with other social groups (such as workers, families, etc.)
- Practice interpersonal and team communication **skills**