

CHAPTER III: METHODOLOGY

A) Introduction – Methodological Needs

The purpose of this chapter is to outline the practical and interpretative steps taken in the research toward this dissertation. The methods employed in this project were designed and implemented in such a way as they might meet the following research goals:

1. Identify food pathways and catalogue food flows for later network analysis
2. Evaluate key factors guiding the development of these food pathways – participant roles, what consumer values are being appealed to, and how the food pathways are organized to appeal to these values – interpretation guided by conventions theory
3. Identify structural communities in the network and evaluate whether they are communities of common interest – based on the conventions evaluations and techniques in structural network analysis
4. Identify the spaces that are produced through local food activities and evaluate the opportunities for alternative valuations and performances to take place through different local food spaces and places

Meeting these research goals required a combination of qualitative and quantitative analytical methods in addition to a customized approach to fieldwork. The fieldwork was guided by social research paradigms such as grounded theory and methods such as snowball sampling and semi-structured interviews, participatory research, and participant observation. Qualitative analytical methods were adapted from some of the middle-level theoretical concepts described in the previous chapter for specific use in this project, while the quantitative network analysis and GIS methods were developed using careful database, network analysis, and GIS software selections. Practical constraints of time, resources, and imperfect data limited the fullest development of these methodological adaptations, but these limitations are presented alongside descriptions of the methods so as to qualify the conclusions of this study. Despite some of the limitations, this research is intended to display innovative methodological solutions for the study of regional food systems that will hopefully spur further applications and development of these methods in future research.

The chapter will begin with a description of the methods used in fieldwork and a summary of the data gathered throughout this process. The discussion of fieldwork

methods will be followed by a discussion of qualitative analysis methods used to distinguish types of local food and the different agendas and produced spaces of local food participants. A presentation of quantitative analysis methods – including database development, network analysis software selection and use, and GIS and network graphical methods – will follow the sections on qualitative methods. Each of these sections has been written with the objective of bridging the theoretical stances of the previous chapter and the practical constraints of data gathering and analysis. In the end, the methodology outlined in this chapter has not been an unqualified success, but it has enabled substantive commentary regarding the four research goals stated above.

B) Fieldwork

1) Iterative Snowball Sampling (Following the Food)

The first goal of fieldwork was to identify local foods and the participants at various stages of local food supply chains in Eastern Kansas. Since the Kansas State Departments of Commerce and Agriculture do not compile data on the specific pathways and ingredient sourcing of food products in Kansas, obtaining systematic and reliable data about local foods in the study region is problematic. However, a few well-known advocates of local food maintain some partial directories of local food sources in the region. In light of substantial initial contacts from these groups, I chose snowball sampling as an appropriate method for branching out from initial key informants and participants in the local food movement to more systematically sample the variety of local foods in the region. Snowball sampling generates data by relying on interviewees and respondents to identify other potential interviewees and respondents through referrals. Conventional wisdom holds that this method is highly biased based on arbitrary choice of initial respondents, irregularities in responses from respondents, and a tendency to exclude relatively isolated participants. However, recent research has shown that given adequate primary and secondary incentives, participants will respond collectively with a robust elucidation of the hidden population being sampled (Heckathorn 1997). Respondents to this study's snowball sampling had both primary and secondary incentives for participation; the primary incentive being that participation in the study may enhance their prestige and notoriety among local food participants, and the

secondary incentive being a social reinforcement of their local food relationships by acknowledgement of a third party (the researcher) of that relationship. The question of validity and comprehensiveness of sampling was addressed by continued snowball sampling until new participants ceased to be identified within the region of interest. Based on this sampling methodology, one can be reasonably confident that local food relations were systematically sampled with a minimum of unrecognized bias in the sampling, and also that the methods resulted in a representative sample of hidden commodity chains comprising local food networks in Eastern Kansas during the summer of 2005.

Since the economic relationships involved in producing and consuming local foods are the focus of this study, I chose to focus my snowball sampling on local food pathways or supply chains. The relationships I specifically asked respondents to name and describe were those where they either bought or sold local foods, and by snowball sampling these relationships I charted a web of local food sales and purchases throughout the Eastern Kansas study region. Triangulation was a key strategy in determining the validity of this sampling methodology, in that respondents would commonly suggest key individuals and organizations to interview and these key participants were invariably sampled through “following the food”. That the key local food participants in the region were all identified and interviewed by following the food is a sign that the extent and diversity of the region’s local food pathways were relatively comprehensively represented by this strategy. Of course, there were practical issues in pursuing this method that required careful definition and judicious application of key parameters such as what can be considered a link/relationship, who can be considered a node/participant, and how to define boundaries of the network.

Identifying local foods can be much more difficult than it might seem, even if respondents are able to define local foods on their own terms. The most obvious issue is that there are widely varying conceptions of local, and the wide variety of those sampled certainly expressed a similarly wide-ranging concept of local. Some viewed it as food grown and consumed within no greater than a 10-20 mile radius, while others thought local could be anywhere within a day’s drive. Some considered anything from a local

food manufacturer to count, while others thought only foods that were made with 100% locally sourced ingredients could be called local. Because this study is concerned with the variety of productions of local foods and the variety of effects from these productions, an inclusive stance on these definitions was chosen so as to maximize the diversity of local foods sampled. Respondents could define local to be as distant as they would like, within reason, and the food being traded must have some amount of verifiably local ingredients to represent a local food link.

Regarding nodes, or participants, there were similar representational quandaries. Most participants were relatively straightforward where both social identity and physical location were localized and in the same place, examples being an individual farmer or a relatively localized organization like a restaurant. However, some organizations, like producer marketing cooperatives and multi-store supermarket local food programs, function socially and physically through multiple places, making their representation as a single network node or as a single location on a map problematic. In these cases, some level of interpretation and black-boxing was necessary to fit the data into the network and map representational and analytical paradigms. Where an individual was part of a larger organization, the larger organization was the one represented, and each organization or individual was localized to a geographical location for mapping and a single network node. Conventions and spatial analysis would serve as the methods for closer evaluations of these black-boxed organizations.

The other major question of participant representation involved the representation of consumers. Adequate representation of consumers in agri-food studies has been a point of debate in recent years, and the right kind of balance must be struck between questions of consumption and production (Goodman and Du Puis 2002), as they are dialectically linked. However, the mobility of consumers makes them difficult to incorporate into a rigid network paradigm of sampling, certainly one of the significant liabilities of this sampling methodology. Individual consumers were therefore excluded from the snowball sampling, although my own participation as a consumer in local food spaces is one way of incorporating the consumer perspective to some degree in this

study. This participatory inclusion of the consumer perspective and spaces of consumption will be discussed later.

This summary of my snowball sampling methodology deserves one final comment regarding triangulation and reflexive sampling. Inherent to the snowball sampling method is the ability to verify the claims of individuals through triangulation with their referents. One respondent may have characterized their relationship with another in strong terms, and an interview with the other might reinforce or negate that perception with new information. There were several occasions when respondents would boast about the number and intensity of their local relationships, only to find that those to whom they referred could not substantiate the relationships. In cases where both parties substantially disagreed about the nature of the relationship, the link was excluded from the dataset. In this process of triangulation, links and participants were mutually validated by multiple parties before inclusion in the study. In addition, there were cases where multiple respondents agreed on the importance of a given participant in the study network after I had initially interviewed that participant. In these cases, it was usually feasible to arrange a more extensive interview, farm or facility tour, and observations of the participant's role in supporting local foods. Through both triangulation and these reflexive and recursive sampling methods, I have tried to minimize validity problems in the data gathered.

2) Performing Interviews

A loose structure for interviews was required for a number of reasons. First, the triangulation described above required persistence in contacting and following up with each individual referred respondent. Some of these individuals were more receptive to the research than others, and flexibility was necessary in adapting to others schedules and the most appropriate forms of contact. In some cases, this involved close contact and visits to facilities and/or farms, while in others it meant very limited contact in the form of a short phone call. Another reason for loose structure is that the interviews involved a very wide variety of participants at all stages of food production and sale, as well as a wide variety of food types. There were very few consistent questions that could be asked from such a wide range of respondents.

The only questions asked universally of every respondent were those directly related to the charting of the network and the snowball sampling. Respondents were asked to list their local food accounts, those with whom they either bought or sold local foods, which foods, and if possible, in what quantities or proportions. Of those willing to describe their local food relationships, lists of partners and qualitative descriptions of relationships were easy to obtain, while few were willing to share specific quantities of foods traded and money exchanged. It would have been impractical to solicit this level of data from the number of respondents involved. More than practical concerns, it would have been a breach of personal and professional privacy in most cases to request these kinds of materials, and as a result specific monetary figures, business plans, and strategies were only discussed if respondents were forthcoming with such topics on their own. Nearly all respondents were willing to at least share a list of their local food links; although the few who declined to participate regrettably left the data collection less-than-complete, links to and from these local food participants were still traced through those other respondents who referred to them, another resiliency of triangulation as a sampling principle.

Aside from verifiable factual data on local food trade, there were other questions and topics of a qualitative nature that were commonly discussed, fuelling the analysis of conventions and spatial politics analyses of this work's later chapters. Although the formal and more thorough conventions and spatial analysis took place after the period of fieldwork, some common producer, restaurant, and retailer strategies became evident in the process of the snowball sampling and interviews. More extensive interviews and other forms of data gathering were used for key representatives of these strategies with their use as interesting case studies and qualitative theoretical analysis in mind. The presumption of a theoretical standpoint was avoided during fieldwork, however, so as to avoid guiding interviews toward preordained conclusions. Instead, the principles of open dialogue and loosely structured interviewing were chosen in accordance with many of the principles of Grounded Theory in qualitative research (Strauss 1990). It was only after evaluating much of the data that conventions theory and spatial analysis seemed appropriate theoretical perspectives for describing some of the common but ill-defined

impressions of local food strategies encountered when discussing participant motivations during interviews.

3) Participant Observation and Participatory Research

It would have been too limiting toward identifying local food agendas to simply rely on interview responses for fieldwork data collection. Participant observation and my own participation as a consumer of local foods were important in evaluating the some of the hidden and collective trends toward local food developments. Much of this observation took place in public and semi-public venues where multiple members of local food production and supply chains meet, relate, and transact. Quite a lot of time was spent at a wide variety of farmers markets throughout the region both observing and shopping, while I also participated as a consumer in many of the restaurants and retail stores trading in local foods in addition to interviewing their chefs and managers. Where possible, farmer interviews took place on their farms so that they could explain their production and marketing rationales in the context of the farm system. In addition, I attended a number of small producer growing and marketing workshops and also a large regional vegetable grower conference. These workshops and conferences helped to place issues discussed in farmer interviews in a context of the wide variety of productive and marketing issues for alternative and small farms. Participant observation and my own participation served as another form of triangulation, where my observations either reinforced or complicated the accounts presented through interviews. These observations also largely contributed to the qualitative analyses of conventions and the produced spaces among local food relationships.

4) Summary of Collected Data and Materials

The observations and information throughout the nine months spent on this project in the field were collected in a variety of forms. Handwritten notes from interviews, both phone and in-person, as well as observations and commentary fill over 300 pages in three different notebooks. Each notebook has a table of contents indicating the organizations discussed and the date for each page, and the tables of contents are also stored in a computer spreadsheet for easy referencing. In addition, 56 audio recordings cover the

more important and substantial interviews as well as a number of the producer workshops and conference lectures attended. Digital photographs were taken throughout fieldwork visits, particularly during farm visits and on trips to farmers markets, but also at some restaurants and retail stores. Finally, a large amount of materials produced by local food participants were collected during interviews and consumer participation, including business cards, informational pamphlets, advertisements, copies of restaurant menus, newspaper articles featuring participants, relevant trade magazines, and even two business plans of recently established local food businesses. This eclectic mix of data is a rich source of local food information in the region, and the next section will outline the codification and translation of this data into useful information on network structure, conventions, and spaces.

C) Quantitative and Structural Analysis

The snowball sampling method used in fieldwork identified 357 organizations with 669 links of local food trade among them. This is a relatively large dataset for data obtained by individual interviews, and representing the data requires some tools developed for large datasets. These tools were designed for quantitative and structural analysis, but the previous chapter outlined a hybrid framework of analysis wedding structural network analysis with qualitative forms of social and political analysis. This hybrid framework enables assessments about the more successful forms of local food and their politics based on relationships between network structure and the kinds of relationships and motivations that underpin this structure. This section will describe the exact methods used in this study to construct, analyze, and represent a dataset in service of this aim of correlating structure with agency and politics. It will also address some of the compromises and limitations of these methods.

1) Design and Structure of Relational Database

The core of any network analysis is an organized framework for cataloging participants and relationships. In the case of this study's network, a relational database is the most effective way of managing the 357 participants/nodes and 669 relationships/links in the network. Relational databases offer users the ability to establish tables with descriptive information about participants as well as tables that list out

relationships. Queries and reports can also be designed to selectively output subsets of the full dataset based on criteria contained in the tables. Each of these features is useful in this project in terms of generating statistics about the kinds of participants and foods involved in local food networks, as well as their proportions relative to each other. The relational database can also be used to generate input files for network analysis software.

The relational database for this study was constructed using the Microsoft Access database software, and it consists primarily of two sets of tables. The first set of tables lists the 358 local food participants surveyed through snowball sampling. These are called “vertices” tables, named after the mathematical term for a node in a network, and each record in the table lists the organization or individual name of the participant as well as some other pertinent characteristics of the participant. Of particular interest were the location of the organization, its role in local food supply chains (i.e. distributor, farm, retailer, restaurant, etc.), the format or style of this type of organization (i.e. cattle ranch or produce grower for farm type, or urban specialty food store or supermarket for retail store type), and the organization’s type of incorporation (i.e. corporate, cooperative, or private individual or family). The second type of table catalogues the links among local food participants, called “arcs” in mathematical network analysis parlance. These arcs are directional, in that food flows from a source to a destination; the “head” of the arc is the term denoting the destination, while the “tail” denotes the origin, named after the respective head and tail of an arrow. This second set of tables consists primarily of three columns, one listing arc heads, one for arc tails, and one listing the type of food. Each row, or record, represents a single link. Multiple records, and therefore links, were required for a pair of organizations that traded more than one type of local food. These two types of tables are shown in Figures 3 and 4, below.

Figure 3: Database Table of Local Food Network Participants

Microsoft Access - [(one mode) Vertices - strictly local : Table]

Organization Name	Organization Type	Organization Format	Organization Incorporation	City Town	Location	Latitude (y)	Longitude (x)
All-Natural Beef Cooperative	Distributor	Marketing-Wholesale-Specialty	Cooperative			37.895	-95.071
Kansas Organic Producers	Distributor	Marketing-Wholesale-Specialty	Cooperative	Bremen, KS	349 Arrowhead R	39.987	-96.759
American Foodservice	Distributor	Wholesale-General	Private	Lee's Summit, MO	290 SE Thomson	38.89	-94.37
Ball's Foods Central Warehouse	Distributor	Wholesale-Self-Distribution	Private Corporate-Wage	Independence, MO	6817 Stadium Dri	39.0529	-94.5043
Western Fruit Sales	Distributor	Wholesale-Specialty-fruit	Independent	Waverly, MO	230 W Walnut, 6	39.207	-93.52
Good Natured Family Farms	Distributor	Wholesale-Specialty-meat,dai	Independent	Bronson, KS		37.895	-95.071
Liberty Fruit	Distributor	Wholesale-Specialty-produce	Corporate-Individual/Private	Kansas City, KS	1247 Argentine B	39.0806	-94.6437 -105
Loffredo	Distributor	Wholesale-Specialty-produce	Corporate-Chain-Regional-M	Kansas City, MO	750 Wyoming St.	39.105	-94.604
Martinous Produce Co.	Distributor	Wholesale-Specialty-produce	Private	Pittsburg, KS	3510 Lone Star, 6	37.4	-94.7
C&C Produce	Distributor	Wholesale-Specialty-produce	Corporate	Kansas City, MO		39.1284	-94.5822
Rolling Prairie	Distributor/Retail	Retail-Store pickup for membe	Cooperative	Lawrence, KS	966 E 800 Rd	38.8781	-95.3538 -106
Depot Market	Distributor/Retail	Wholesale-Specialty-canned	Independent	Courtland, KS		39.78	-97.9
Bush Farms	Farm			Edwardsville, KS	11300 Kaw, 6611	39.064	-94.841
Alan Terry	Farm		Family	Baldwin City, KS	1895 N 500th Rd	38.8113	-95.1502
Earl Edelman	Farm	Animal-Beef Cattle Farming	Family	Bern, KS	R.R. 1 Box 87, 66	39.9628	-95.9674 -106
Rainbow Organic Farms	Farm	Animal-Beef Cattle, Poultry Fe	Family-Wage	Bronson, KS	1976 55th St	37.898	-95.0735 -105
Prairie Natural Beef	Farm	Animal-Beef Farm/Ranch	Family	Minneapolis, KS	658 Justice Rd., 6	39.103	-97.822
Tim Maier	Farm	Animal-Beef Farm/Ranch	Family	Rantoul, KS	3770 Rock Creek	38.5573	-95.1671
Clifford Edelman	Farm	Animal-Beef Farm/Ranch	Family	Sabetha, KS	Rt. 4 Box 36, 665	39.903	-95.7996 -106
Ron Grosnikle	Farm	Animal-Beef Farm/Ranch	Family	Corning, KS?	Rt 1 Box 33, 6641	39.2759	-95.9425 -106
Bob Greenwood	Farm	Animal-Beef Farm/Ranch	Family	Carlton, KS	887 Eden Rd, 674	38.682	-97.2793 1082
Rice Brothers - Terry	Farm	Animal-Beef Farm/Ranch	Family	Horton, KS	1101 Jackrabbit F	39.678	-95.583
Eugene Edelman	Farm	Animal-Beef Farm/Ranch	Family	Sabetha, KS	Rt. 4 Box 260	39.903	-95.7996 -106
Elmer Lehman	Farm	Animal-Beef Farm/Ranch	Family	Leroy, KS	494 Underwood S	38.279	-95.9778 -106
Don Altenhofen	Farm	Animal-Beef Farm/Ranch	Family	Goff, KS	Rt 2, 66428	39.6531	-95.958 -106
Bruce Sander	Farm	Animal-Beef Farm/Ranch	Family	Gorham, KS	Box 222, 67640	38.8843	-99.0481 -110
Lynn Smith	Farm	Animal-Beef Farm/Ranch	Family	Eldorado Spring	Rt. 4 Box 347A, 6	37.8709	-94.0208 -104
Steve Edelman	Farm	Animal-Beef Farm/Ranch	Family	Sabetha, KS	Rt. 4 Box 290	39.903	-95.7996 -106
Jay McKay	Farm	Animal-Beef Farm/Ranch	Family	Mindenmines, KS	567 West P. Hwy	37.4782	-94.5827 -105
Lynn Edelman	Farm	Animal-Beef Farm/Ranch	Family	Sabetha, KS	Rt. 4 Box 272	39.9033	-95.8001 -106
Roy Winkler	Farm	Animal-Beef Farm/Ranch	Family	Seneca, KS	Rt 1 Box 99B, 665	39.8361	-96.0645 -106
Ed Reznicek	Farm	Animal-Beef Farm/Ranch	Family	Goff, KS	Rt. 2 Box 23, 664	39.6531	-95.958 -106
James Potter	Farm	Animal-Beef Farm/Ranch	Family	Iola, KS	2204 South State	37.9211	-95.3717 -106
RP Organic Beef	Farm	Animal-Beef Farm/Ranch	Family	Powell, MO		36.6	-94.2
Brad Edelman	Farm	Animal-Beef Farm/Ranch	Family	Sabetha, KS	R.R. 4 Box 38, 66	39.903	-95.7996 -106
Gary Edelman	Farm	Animal-Beef Farm/Ranch	Family	Sabetha, KS	R.R. 4 Box 20, 66	39.903	-95.7996 -106
Amy's Meats	Farm	Animal-Beef Farm/Ranch	Family	Lawrence, KS	2548 Wallace Rd	39.126	-95.2328 -106
James Dobbin	Farm	Animal-Beef Farm/Ranch	Family	Goff, KS	Rt 2 Box 102, 664	39.6531	-95.958 -95.9
Fairview Ranch	Farm	Animal-Beef Farm/Ranch	Family	Soloman, KS		38.9	-97.4

Record: 1 of 357

Figure 4: Database Table of Local Food Network Links

Microsoft Access - KS_network_(06_05_07)_2006-07-15 : Database (Access 2000 file format)

KS_network_(06_05_07)_2006-07-15 : Database (Access 2000 file format)

[(one mode) Arcs - strictly local : Table]

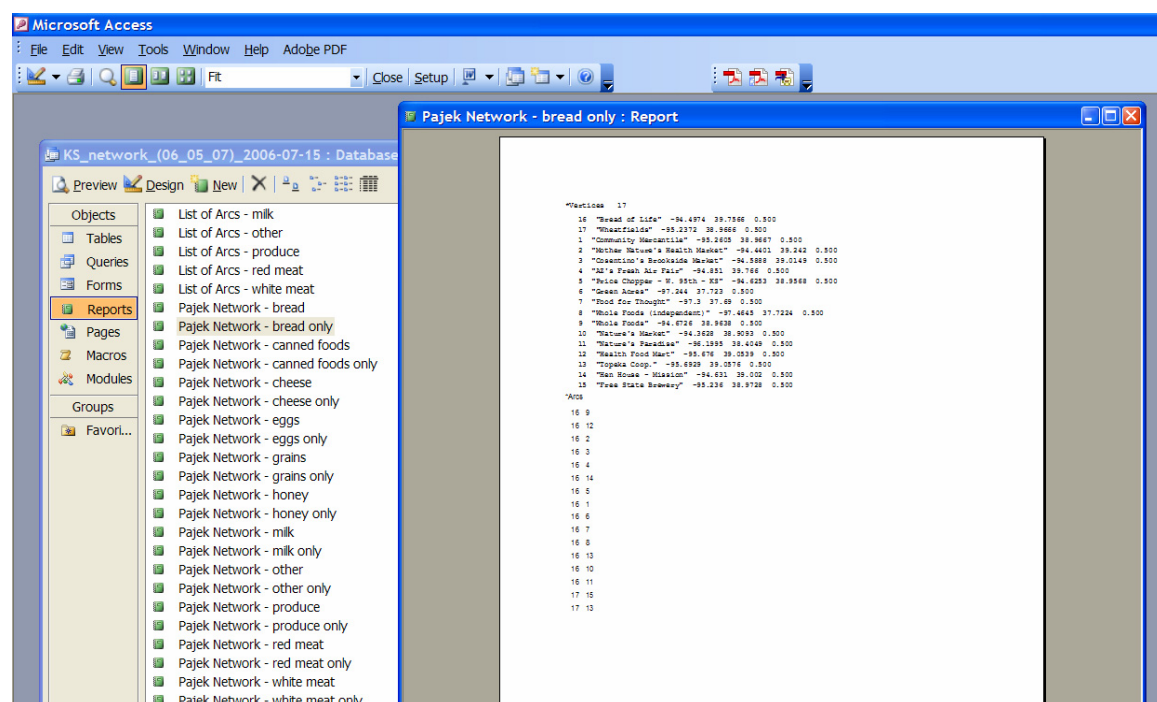
tails vertexnr	tails Organization Name	heads Organization Name	heads vertexnr	Food Type 1	Local Food Link
4	Alba Farms	Bread of Life	35	Yes	
5	Allen Oborny	KC Buffalo Company	191	Red Meat	Yes
6	Allen Terry	Shadow Glen Golf Club	299	Produce	yes
6	Allen Terry	Rolling Prairie	286	Produce	Yes
6	Allen Terry	Lawrence Golf Club	199	Produce	yes
6	Allen Terry	Milton's	228	Produce	yes
6	Allen Terry	Free State Brewery	108	Produce	Yes
6	Allen Terry	Community Mercantile	65	Produce	Yes
6	Allen Terry	Alvamar	10	Produce	yes
6	Allen Terry	Pachamama's	248	Produce	Yes
6	Allen Terry	Wheatfields	342	Produce	Yes
7	All-Natural Beef Cooperative	Good Natured Family Farms	116	Red Meat	Yes
8	Alma Creamery	People's Grocery	252	Cheese	Yes
8	Alma Creamery	Alma Creamery	8	Cheese	Yes
8	Alma Creamery	Whole Foods	346	Cheese	Yes
8	Alma Creamery	Eastside Market	90	Cheese	Yes
8	Alma Creamery	Topeka Coop.	326	Cheese	Yes
8	Alma Creamery	Westside Market	340	Cheese	Yes
8	Alma Creamery	Community Mercantile	65	Cheese	Yes
8	Alma Creamery	Alma Creamery	8	Cheese	Yes
8	Alma Creamery	4 Olives	1	Cheese	Yes
9	Alma Farms	Grand Street Café	118	Red Meat	Yes
9	Alma Farms	City Tavern	62	Red Meat	Yes
12	Amy's Meats	Local Burger	206	Red Meat	Yes
13	Anne Allen	Dean & Deluca	83	Produce	Yes
17	Ball's Foods Central Warehouse	Hen House - Parallel	135	Produce	yes
17	Ball's Foods Central Warehouse	Hen House - Merriam	133	Produce	yes
17	Ball's Foods Central Warehouse	Hen House - Shannon Valley	136	Produce	yes
17	Ball's Foods Central Warehouse	Hen House - Lenexa	132	Produce	yes
17	Ball's Foods Central Warehouse	Hen House - Mission	134	Produce	Yes
17	Ball's Foods Central Warehouse	Hen House - Fairway - KS	129	Produce	yes
17	Ball's Foods Central Warehouse	Hen House - Blackbob	126	Produce	yes
17	Ball's Foods Central Warehouse	Hen House - Village Market	139	Produce	yes
17	Ball's Foods Central Warehouse	Hen House - College Blvd	127	Produce	yes

Record: 7 of 692

A set of vertices and arcs tables was created for the entire network and also for all the subsets of the full network that were studied. There are sets for each of the eleven food types as well as each of the structural “communities” identified using the community structure algorithms discussed below. However, creating these sets of tables was only a necessary first step toward computational network analysis. These tables are the sources of data for network analysis software that would perform most of the analysis and all of the graphical representations of the network. The report function of Microsoft Access was used to create customized output files compatible with the network analysis software. An example of one of these reports is shown below in Figure 5.

Organizing the tables in this way was a relatively simple and straightforward way of setting up a large dataset for network analysis. It also allowed the systematic creation of basic statistics based on the number of each type of organization, the number of links for each food type, and the distribution of link lengths for the whole network and each network subset. The troubles and limitations of the relational database were not so much in its analytical capacities as in the difficulties inherent in creating the tables in the first

Figure 5: Database Export of Network Data File



place. Organization types, roles in supply chains, forms of incorporation, and even things as simple as organization names and locations are never as concrete as they would seem from the above tables. Developing adequate classifications for each of the descriptive organizational characteristics and for food types were difficult, but fitting an organization or link into a single class within these classification systems is also problematic. These troubles are but one expression of the problems inherent in structural analysis, the conceptual reductionism and purifications necessary for fitting complex and incomplete characteristics and relationships into simple typologies and classifications. Yet, the advantages of pattern recognition in statistical and structural analysis can outweigh the dangers of such oversimplifications as long as one remembers that the world is not necessarily like the method. In this case, structural network analysis can provide a picture of regional local food relationships, even if it is oversimplified, that can be analyzed to show patterns that are useful as context for less reductionist forms of qualitative analysis.

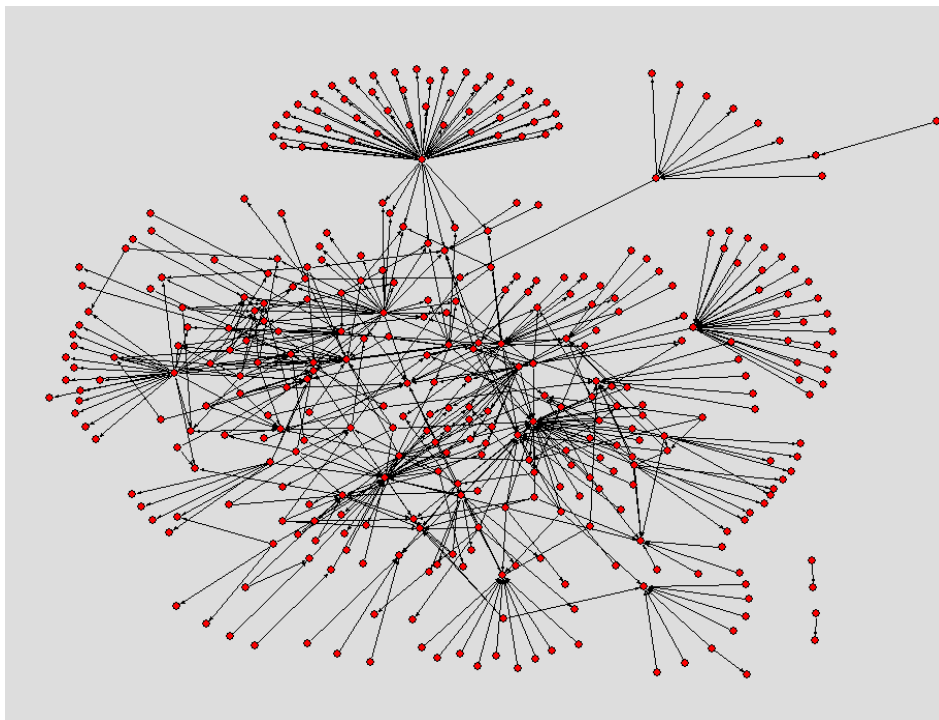
2) Network Analysis Software: Choice, Analysis, and Representation

As computing power and access to large datasets have increased in recent years, a large array of social network analysis software has been developed by independent research groups and commercial interests. Some of these programs were developed with tackling a specific facet of network analysis in mind, such as visualizations, structural measures, or dynamic changes in networks, while others have taken a broad view in incorporating the best methods of each type of analysis. A few are open-source and freely distributed via the internet, but most charge at least a nominal fee for use, making experimentation with different software costly. For general network analysis, two software packages seem to be the most popular in that they both perform most analysis functions along with strong visualization capabilities, were developed by social scientists for their own research purposes, and are inexpensive or free (Huisman and van Duijn 2005). These two software packages were both used in this project's analysis of local food networks, and they are called Pajek (de Nooy, Mrvar et al. 2005) and UCINET (Borgatti, Everett et al. 2002). Pajek has powerful functionality, but it is somewhat awkward and difficult to use, probably since the authors have not sought to

commercialize its use, rather focusing on creating a robust textbook explaining its use (de Nooy, Mrvar et al. 2005). UCINET has a superior graphical user interface, owing to its commercialization by its authors, making it easier to use than Pajek. Despite the ease of use of UCINET, Pajek performed some functions missing in UCINET, and both packages were useful in this study's network analysis.

The most basic, but maybe the most important, function of network analysis in this study is that of visualizing the network and its subsets. Both UCINET and Pajek offer similar automated functions for ordering the network in intelligible ways, despite their differences in user interface. Each can arrange the nodes in lines or in circles, but they also have automated algorithms that can allow the structure of the network to shape the network of the pattern. These algorithms weight links with a spring function, where each link has an ideal length, and running the algorithm allows each link to push and pull the nodes it connects so as to reach its ideal length. There are also parameters that seek to maximize the angle between any two links touching a given node. The results can highlight clusters and structural relations that are difficult to see through manual manipulation of the nodes. The image below in Figure 6 is the first network diagram

Figure 6: Pajek Representation of Eastern Kansas Local Food Network



constructed using the entire network dataset and one of these spring embedding visualization algorithms.

This diagram shows that there are definitely peripheral network participants and highly interconnected core clusters, but it is difficult to discern any specific structures ordering this network. The confusion of this image is only reinforced when finding that the most influential and seemingly well-connected key informants from fieldwork are found in the most unclear sections of this image. This overall network is simply too large and structurally complex for any basic visualization to capture useful patterns. Teasing out any useful patterns from the network therefore requires ways of identifying and visualizing subsets of the entire network.

One way in which subsets were identified was accomplished outside the network analysis programs. The relational database allowed the creation of separate output files for the links and nodes of each local food type. Network analysis was thereby possible for each commodity chain/network. The structure of trade in specific commodity types is one interesting form of analysis, analogous in many ways to the structural analyses of important global food actors in more traditional political economic agri-food research (Bonanno, Busch et al. 1994; Hendrickson and Heffernan 2002). The ordering of local food networks is not as uniform or homogenizing as many conventional global commodity systems, and the diverse coalitions that are the heart of local food networks cannot be captured by such commodity-based and sectoral analysis.

To complement analysis by commodity/food type, community structure analysis is a burgeoning field of structural network analysis that could usefully capture patterns of coalitions that are destroyed by partitioning the network by food type. Community structure analysis uses measures of *betweenness* to identify cohesive subgroups within the broader network. Some initial testing of one of the first community structure algorithms showed that the communities identified correlated well with real coalitions in some closely studied and well-understood social network case studies (Newman 2004; Newman and Girvan 2004). Others have, of course, proposed new algorithms for determining community structure, with the aim of greater accuracy and computational

efficiency for use in very large networks. Comparisons of some of these algorithms show that all are somewhat equivalent in accuracy and computational time for a network the size of my study, with the benefits of newer algorithms mostly accruing in networks larger than about 10,000 nodes (Danon, Diaz-Guilera et al. 2005). The Newman-Girvan algorithm (Newman and Girvan 2004) is featured in both Pajek and UCINET, and since it is roughly equivalent in performance to other options for the purpose of this study, this algorithm was the one chosen for community structure evaluation.

While community structure and structural commodity chain analysis are both potentially very useful in discerning patterns within the local food network structure, the limitations of these analyses and their underlying data should be noted. One very important difficulty arises from the technical methods of community structure algorithms. The algorithms function by finding the links that have the highest *betweenness* measures and sequentially eliminating them, basically a way of finding and eliminating the links that bridge the cohesive parts of the network. This sequential process of link removal does tend to highlight the more cohesive groupings of nodes in the network, but it does so at the expense of eliminating the relationships that bridge these groups. When the community structure algorithms are used extensively to subdivide the full network in Chapter 6, these subdivisions will not take into account some very important links between members of the subdivisions in question and other subdivisions that are not under consideration. Some of the network representations display multiple network communities in an attempt to depict the simultaneous cohesiveness of groups and bridges to other groups, but using these combined pictures can too easily result in pictures just as muddled as that of the full network above. It requires a delicate balance to do justice to both the cohesiveness of communities and their extended relations with the rest of the network, a tension that mirrors the classical tension between agency and structure. It should therefore be acknowledged that dissecting the network structure does more than reveal hidden patterns; it also destroys information in the process.

Another major limitation for network analysis is one mentioned above about analyzing structures based on a reduced classification system. Links are valued the same

in the relational database without consideration of the strength of the connection, whether in terms of amount of food, proportion of business for either purchaser or seller, or any number of other measures of intensity or power in the local food connections. Such an overly simplified account of relational structure is bound to overlook many of the relational patterns inherent in the region's local food relations. The structures of communities within this simplified dataset may or may not represent the most important influences on decision-making and strategies of participants as well as access for potential new participants. Relating the structure of relations to the strategies, decisions, and outcomes of local food relationships requires more than network analysis.

Despite these algorithmic and interpretative limitations, communities and commodity chains in the network may indeed illuminate coalitions and collective partnerships that are difficult to perceive or represent using only qualitative conventions and spatial analyses. Conventions and spatial analysis can also speak to some of the inadequacies of simplified structural analysis, either contradicting or reinforcing the importance of the communities and commodity chain structures identified through network analysis. Acknowledging that these forms of network analysis are limited representations of a complex social movement justifies their use as but one perspective in a triangulation of analysis strategies. Before addressing some of the other analysis strategies, the use of GIS for visualizing networks needs to be discussed.

3) GIS and Mapping

Network analysis is not the sole set of methods for visualizing the networks of relations codified through the relational database. GIS also is a potentially fruitful set of technologies for representing patterns, this time in a more typical geographical spatial frame, of local food relations. Mapping the network and its subsets using GIS is in many ways more important for local food analysis than doing so in the abstract spaces of the network, since one of the important questions about local food development is whether it has any of the spatial dependencies that the term "local" tends to evoke. Noting variations in geographic distributions of local food among different commodity chains and community structures lends even more utility to these forms of network partitioning in relating structure to the complex motivations and politics of local food participants.

The methods of combining of network analysis outputs and GIS are not commonplace, however, and they merit some discussion.

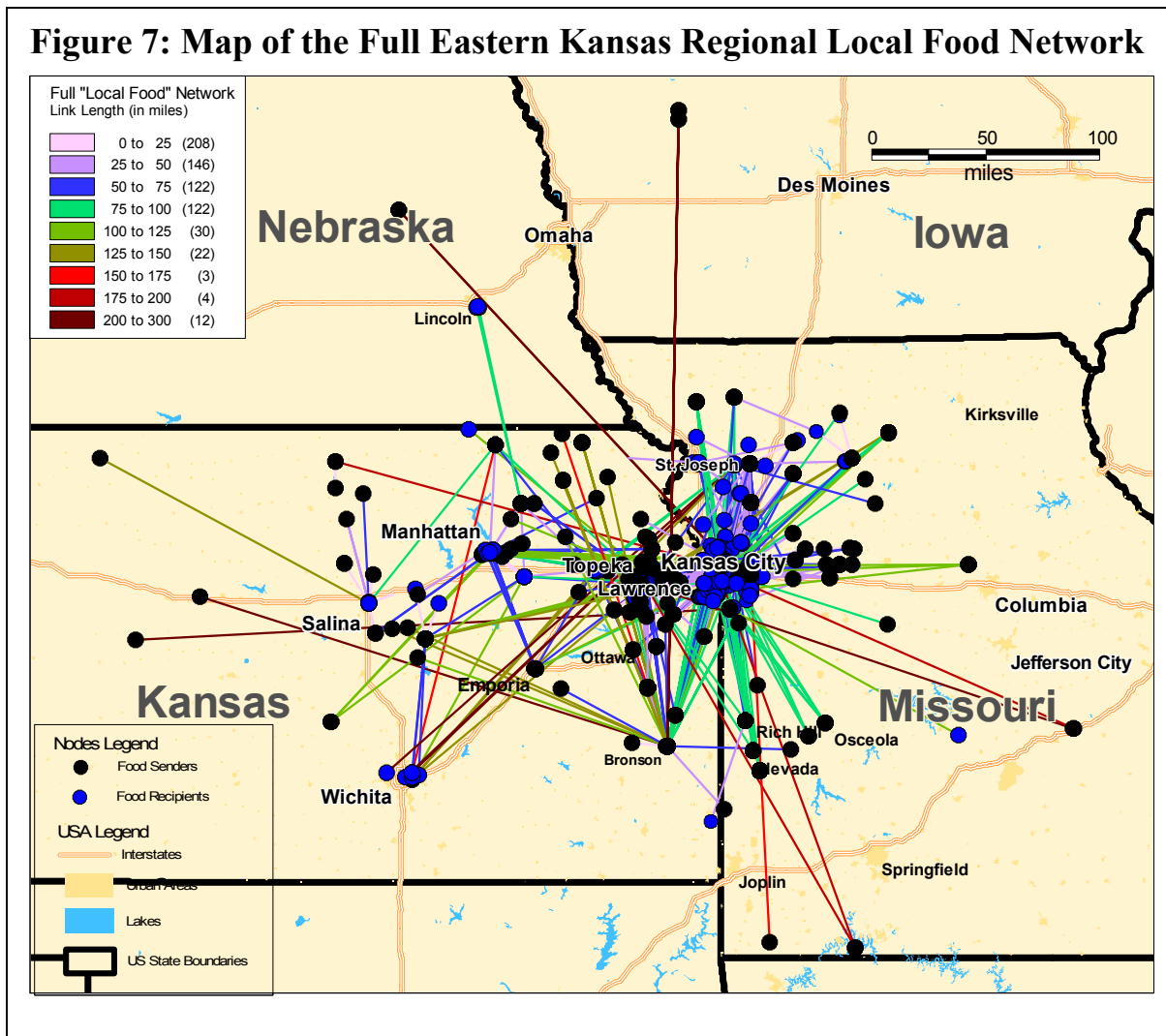
Overlaying a network onto a territorial map seems like it would be a relatively trivial exercise, in that GIS software tools are designed with the functionality of constructing maps by sequentially adding data layers of interest onto base layers for the territories involved. Points, lines, and shapes can all be added as layers, as can images gathered from remote sensing satellites. Yet, the programming languages of GIS software often produce lines and polygon shapes by constructing them with a series of closely spaced points. This is a problem for producing networks of the kind constructed in Pajek and UCINET within GIS, where there is a big difference between a point and a line. There are ways of programming around this difficulty, but they require much more than novice GIS skills. One of the most accessible GIS packages, ArcGIS, offers no ready-made package for this kind of network analysis. However, the MapInfo Professional GIS software has a plug-in functionality called Spider Graph which allows the construction of network layers analogous to those created in the specialized social network analysis software. For this reason, MapInfo was the software of choice for constructing the maps in this study.

Creating basic coverage maps for the study region was an introductory exercise in finding and downloading basic data layers for features such as roads, bodies of water and waterways, and urban areas, and also in using GIS software to create the maps. Overlaying the local food network and subsets onto these maps of the study region was a bit more difficult, requiring careful integration of tables from the relational database with required formats in MapInfo. There were two important aspects to this translation. The first involved locating each organization at a geographical point and including the latitude and longitude of this point in the Vertices and Arcs tables for the networks, a process called geo-referencing. The second involved importing the Vertices and Arcs tables for each network and subset into MapInfo and rendering the tables readable as map layers. Once each of the tables were imported into MapInfo, the Vertices tables were added as layers of points, while the Spider Graph function converted the Arcs tables into

layers of lines connecting the head and tail geo-referenced points for each link. An image of the output for the entire network is shown below in Figure 7.

Using some creative combinations of tables, it is feasible to color-code both links and nodes in the network to highlight some of the spatial distributions of the network. Black and blue dots are used throughout the study to represent the food senders and food recipients, respectively, using separate tables for link tails and link heads from the relational database. MapInfo also provides thematic mapping options, allowing for a spectrum of color-coding for a given dataset. Thematic mapping has been used below and also throughout the study to color-code links according to their lengths. This makes distinguishing links and seeing spatial patterns among them easier. The conventions used for color-coding are both presented in the map legend below.

These GIS mapping tools provide some useful enhancements for the representation



and analysis of local food networks. The analytical purchase of using commodity chain and community structure network analysis to partition the full network into structurally interesting subsets can be supplemented by using GIS to see geographical spatial tendencies in the network and its subsets. The benefits of the GIS approach are two-fold; it supplements the topological space of abstract network analysis with a geometrical space for comparing geographical tendencies among different network subsets, and it also enables a quantitative assessment of what kinds of distances and spatial geographies are considered local in the political economy of local food. Despite these benefits, the reservations of structural network analysis, both in the compromises of codifying and classifying data and those of overly rigid methods of partitioning network structure, still apply in these mapping exercises. The map is such a powerful tool that it is easy to make assumptions that ignore the methodological problems of constructing maps and that reify the maps as representations of the world as-it-is. It is with these reservations in mind that the use of conventions theory and the critical theories of the production of space are so important for this research project. They provide partial, incomplete, and politically charged readings as counterpoint to the more rigid, static, and symmetrical representations of local food relationships developed in this section. A discussion of qualitative methods adapted from these theoretical standpoints is the subject of the next section.

D) Qualitative Analysis

In the interest of understanding how both conventionally powerful and historically marginalized actors figure into shifting developments of agri-food systems, the study of local food relations requires more nuanced social and political analysis than the overtly structural accounts of network analysis. The combination of grounded theory and network snowball sampling that guided the fieldwork for this study generated rich data in several formats. Yet, I was unable to infer novel middle-level concepts based merely on this data to explain the relationships between social and political underpinnings of local food and its collective geographical, environmental, social, and economic outcomes. Initial forays in interpreting fieldwork data led to the conclusion that Eastern Kansas local food relations exhibited many of the same propensities of other study areas

represented in the literature. It would have been premature to assume such a statement prior to engaging in fieldwork, but it is a natural first conclusion that suggests a need to engage and adapt some of the successful theoretical positions in alternative agri-food research toward making constructive contributions to agri-food literature.

The theoretical literatures that seemed most appropriate for interpreting the results of fieldwork were that of conventions theory and the discussions over the role of the production of space in constructing political economic relations. Each offer flexible frameworks for interpreting the social and political construction of economic relations, one from a social perspective and the other from a spatial perspective. As food localization involves shifting prioritizations of both social and spatial relations, these theoretical vantages fit nicely with the important dimensions specific to food localization efforts. The theoretical positions might make welcome contributions as conceptual foundations for research into both agri-food relations and their effects. Exploring their use toward these ends requires matching methods for interpreting data from fieldwork with their broader theoretical concepts.

In this specific study, the conscious choice to largely avoid theory-driven fieldwork methods means that the data obtained is poorly organized for interpretation through specific theoretical frameworks. This is a difficulty of any post hoc application of theory. Yet, these difficulties are mitigated in this study by the richness and diversity of data collected through interviews, visual and audio recordings, observations and participation, and collected materials. Interpreting this data is also aided by the flexibility of both the conventions and production of space theorizations. The following sections will outline methods for adapting the conventions and production of space concepts for use with the specific data collected during fieldwork and the outputs of network analysis.

1) Identification of Conventions – Interpreting Fieldwork toward Middle-level Conclusions

As a reminder of topics discussed in the previous two chapters, Conventions Theory posits that economic action is fraught with uncertainty and conventions are the rules, codes, and expected behaviors that economic actors develop together and use to help allay their fears and normalize the variability of business. Some of the primary

conventions theorists have noted that the underpinnings of many conventions tend to be moral in nature, prescribing ideal values grounding economic action. Moral categories they have noted include market, civic, domestic, opinion-based, and inspirational, drawn from ideal moral foundations in classical political theory (Boltanski and Thevenot 1991; Boltanski and Thevenot 1999). These classifications of values underpinning economic action have aided research into quality food production in Europe, and it could be equally helpful in interpreting the social construction of local food in North America. However, its use in this study requires careful consideration of the relevance of fieldwork data toward identifying conventions based on the negotiation and application of local food values.

Data collection in this study was guided by a snowball sampling methodology specifically attuned to food flows. This method primarily provided information about the productive and exchange relationships of local food, as well as the ways in which it is represented throughout the commodity chains and to the consumer at the point of sale. The data is therefore appropriate for interpreting the social construction of local food commodity chains through value relations. Network analysis provides a view of distinctive commodity chains and networks, and conventions can be used to understand the motivations of individuals and groups of actors in making decisions that affect the structure of these commodity chains/networks at the same time as they shape the materiality and representation of local foods. The strategy for this kind of conventions analysis of local food is three-fold:

1. Identify key commodity chain types and network communities, and interpret the moral underpinnings and justifications of relationships and production in these chains/networks
2. Identify the key relationships and participants binding the chains/networks together and interpret the negotiations and compromises that hold the chains/networks together at these critical points.
3. Explore the implications of these compromises of value on the qualities of food, on access to local food networks and spaces for producers and consumers, and on the development outcomes of these compromises.

The results of this kind of analysis into the values underpinning the creation and marketing of local foods should be helpful for a number of reasons. One important

benefit is in the ability to compare the values underpinning production and those communicated through marketing, allowing for some commentary about the extent to which local food represents new systems of food provision or merely marketing hype. Another benefit related to this comparison is that of understanding the ways by which local food values are translated between productive relationships and marketing styles. A more abstract theoretical benefit involves the ability to understand the many ways in which local foods dialectically internalize social relations and values, thus challenging any interpretation of them as pure commodities. Conventions analysis thereby empowers interpretations of local food that transcend simple and reductive readings of systems of provision as commodity chains.

The representation of networked commodity chains and the interpretation of commodity chains as socially constructed through conventions demand a more inclusive middle-level concept than that of the commodity chain. For the purposes of this study, I have used the term local food pathways to denote common and coherent food network lifecycles from farm to plate. Multiple commodities co-produce these pathways based on common traits and production/consumption logics, making local food pathways a trans-commodity form of analysis. The multiply embedded and negotiated production and marketing strategies in these local food pathways are still analyzable through the conventions frameworks. Local food pathways therefore provide an adequate middle-level concept to entertain patterns of consistency at the same time as noting the variations and diversity of local food initiatives. The concept of the local food pathway will be used as an organizing concept in Chapter Five for representing the combinations of actors, conventions, and food types that appear over and over throughout Eastern Kansas.

There is one more middle-level framework that will be used to supplement the analysis of value construction and conventions. Conventions analysis may be very helpful in understanding why particular actors develop economic relationships with each other and how they manage these relationships over time. However, comparing or contrasting any relationship or set of products is made difficult through the many different possible values underpinning the differences in relationship or product. Michael Storper's "worlds of production" framework (Storper and Salais 1997), presented earlier in Chapter

Two is one way of representing production strategies and values in such a way that one can compare producers or local food pathways on the basis of their products. By locating the strategies and products of representative organizations in one or another of the “worlds of production”, the Storper framework provides a basis for understanding how these organizations differentiate themselves in the market for local food as a survival strategy. This productive framework is an important complement to a focus on the formation and maintenance of relationships as survival strategy.

The “worlds of production” framework is also useful beyond a comparative analysis. It can help to dissect some of the spaces of exchange for local foods in terms of the different types of products and marketing strategies that inhabit these spaces. To effectively order relationships, markets must produce space as much as any individual organization, and local food marketplaces will feature organizations differentiating themselves in many of the same ways as they do in the abstract market. Studying the differentiation of space through the “worlds of production” framework can help in understanding the differentiation of the local food market in terms of production strategies and intended consumption niche. It is in effect a reading of places inhabited by local foods in terms of spatial market differentiations. This use of conventions theory is interesting and provocative, but it deserves a broader grounding in more diverse methods for identifying the spatial projects of local food. The following section will outline methods for considering the contestation, cooperation, and differentiation among the multiple types of local food spaces.

2) Spatial Analysis

Spatial analysis will be used to attempt to capture some of the politics and geographical implications of local food projects in Eastern Kansas. The specific formulations are grounded in literature theorizing the dynamics and politics involved in the production of space. As was outlined in Chapter Two, key authors include Doreen Massey and David Harvey, among others, as they reason that productions of space are at the heart of contemporary shifts in the scales and politics of political economic orderings. In Massey’s view, grappling with productions of space requires viewing them as relationally constructed, incomplete and always-in-the-making, and as simultaneous

products and sources of disruptions (Massey 1999). Harvey argues that hope for progressive politics depends on the ability to reach across such disruptions, or “militant particularisms” as he calls them, to formulate collective solutions based on the “global ambitions” of justice (Harvey 1996; Harvey 2000). The method outlined below is intent on providing useful interpretations of the disrupted and disrupting spatial projects at the heart of building local food networks based on the data collected through this study’s fieldwork.

There are two base assumptions of this method. The first entails viewing local food, and the places in which it is produced and which it inhabits, as constituted through multiple types of space. The second recognizes the production of food and place as ordered through politics, the asymmetries in and among relationships that determine who and what has access and can engage in spatial projects, as well as what kinds of access and projects are feasible. The spaces of local food are not purified spaces, detached from those of conventional foods and other forms of economic projects. Local foods, as they currently exist and are produced, are dependent on coalitions with many kinds of actors with many different agendas and access to resources. These coalitions take place through many different kinds of space. Given these two basic assumptions, the method for spatial analysis in this study must read something like this:

1. Look for the kinds of spaces and productions of space involved in the different modes of local foods and key actors identified using conventions and network analysis.
2. Identify the dependencies and coalitions between local food and other economic interests in these place-based spatial projects.
3. Explore the implications of these dependencies on the kinds of participation, food qualities, and progressive outcomes that can result from these spatial projects and coalitions.

This method can be greatly aided by a typology of spaces appropriate for the study of foods. I have invented a custom typology for this purpose based on what I see as four critical types of space at the heart of local food projects – *physical*, *associational*, *metabolic*, and *representational/discursive*. Physical space is the rather intuitive three-dimensional Euclidean space occupied by objects and bodies. Associational space is the sort of abstract space represented in network diagrams, where distant others are

implicated in the ordering of the local. Metabolic space is the space in which the dynamic relations of plant and animal growth, nutritional quality, taste and smell, and bodily metabolism take place. Representational space is that of discursive signs and signifiers, of language, of symbolic representations that are translations of quality and values. While agri-food relationships introduce unique metabolic complexities in political economic development, the four types of space are all important in other economic spheres as well. This combination of agri-food exceptionalism with its spatial relationalism allows this typology to represent the internal spatial pluralities distinctive to local food projects at the same time as considering external pluralities in the form of coalitions with other economic spheres of production and consumption.

Conceptualizing power in the production of space is the last remaining concern for this methodology in assessing the politics of local food projects. Like spatial projects and the social strategies of economic actors, power is never uniform, complete, or pure. There are many different forms and degrees of power, some more dominant or manipulating than others, but all of them relational, asymmetrical, and contributing to the politics of space in one sense or another (Allen 1999). John Allen articulates a basic typology of power, but it is clear based on his argument that considering the partial assemblages of power at work in productions of space is an under-theorized topic. If anything, this is a good opportunity for grounded theory to support conclusions about the kinds of power expressed through local food relationships. The customized typology of space above will be used in Chapter Seven to represent key local food projects identified with conventions and network analysis in terms of the spaces they produce, and power within local food relations can finally be explored within this spatial context.

E) Summary and Research Agenda

1) Illuminations

The intent of this methodology chapter has been to report on the methods devised to investigate some pressing issues in the development and outcomes of the local food movement in North America. Specifically, studies of food localization strategies in North America have tended to focus on individual case studies, one or two direct marketing formats linking producers and consumers, or critiques of stances in food

localization advocacy. There has been less focus on the political economy of food localization projects or on the interscalar geographies produced by these efforts. This research project was designed to address these shortcomings by investigating the variations and similarities in political economy among a diversity of local food projects, as well as the composite geographical tendencies they exhibit within the study region of Eastern Kansas. The methods discussed in this chapter weave an account of this regional political economy using a triangulation between fieldwork methods, quantitative analysis, qualitative analysis, and grounded interpretations of gathered data in line with the theoretically informed analytical frameworks.

To be able to investigate variations in local food development, data gathering was designed in such a way as to identify a variety of local food chains and geographies. Participants in the snowball sampling were allowed to define local food in whatever ways they deemed most appropriate, and the networks of food flows traced a wide variety of participants and cross-fertilizations among local food projects, as will be seen in the coming chapters. Interpreting the roots of some of these differences required multiple forms of data gathering and multiple formats of data, where consistent patterns amongst interview notes, audio recordings, photographs, observational notes, and collected materials form the foundations of interpretation. This type of data triangulation is reinforced by gathering such data from reciprocal perspectives in the network, where claims from either side of a network link either reinforce or deconstruct each others' positions. Fieldwork methods were therefore designed and implemented in such a way that was open to multiple interpretations of local food and to sampling the diverse types of local food produced from these multiple vantage points.

The task of representing and interpreting the data gathered on Eastern Kansas local food developments falls to theoretically informed methods of network, conventions, and spatial analysis. Network analysis will present structural accounts of differentiation amongst local food projects in the region. Part of these structural accounts will be an accounting of participant and food types, as well as the numbers of links for different food and participant types. Partitioning the network through a relational database will allow the identification of topologies of flows for individual food types, while

community structure algorithms and network analysis software will enable the identification of cohesive structural topologies across food and participant types. GIS will enable the representation of the regional geographies of these topologies of food types and network communities. This form of network analysis deviates from actor-network style agri-food network analysis in that it explicitly focuses on structures and topologies as opposed to the heterogeneous socio-materials and translation strategies constituting the network. This focus on structural analysis methods allows for the subdivision of local food networks toward an understanding of divisiveness as well as cohesion in the networks, something with which actor-network accounts have struggled.

Conventions and spatial analysis frameworks have instead been chosen for the task of evaluating the heterogeneous incorporations and translation strategies that constitute and produce local food networks and their variable structural topologies. Consistent patterns of local food pathways will form the contexts within which variations in conventions and the values that underpin them will be investigated. These variations represent the variable strategies small groups of participants use to mitigate the uncertainties of producing food within the larger context of the differentiation of products among all local foods. Reading the social construction of local food through conventions is somewhat groundless without also reading the spaces through which these social constructions manifest themselves in ordered socio-material projects. The multiple forms of collaboration, competition, insurgency, and retreat that are exhibited through the negotiation of conventions in actual produced spaces represent the power and politics of local food in the multiple sites of agri-food contestation throughout the study region. Studying the production of spaces using the typology developed in this chapter is one way of representing the grounded politics of local food. Conventions analysis has yet to be used in such a study of regional food system differentiation in North America, and the spatial analysis methods outlined in this chapter are new adaptations of high level theoretical principles in the production of space toward middle-level concepts that are useful in empirical analysis.

These novel methodological developments and applications are not without their detractors, however. The next section discusses some of the important assumptions and biases that limit the conclusions and applicability of this study.

2) Assumptions and Biases

The choice of these methods has been underwritten by a few important, but potentially problematic, assumptions. One assumption is that food localization strategies and discourses have developed to the point that local food is a significant buzz word that will be meaningful to respondents. Implicit in this assumption is another, that local food is in some way alternative and distinct in thought and practice from its global, conventional other. The potential outcomes of food localization, whether or not they live up to the ideals of advocates, only accrue to be tested if local food can be seen as distinct. Otherwise, the effects are hidden in the dynamics of conventional agri-food systems, while local food remains an abstract ideal. The viability of this research project rests on the assumption that local foods are distinguishable from their others, and that local food development can be promoted in distinctive, though not independent, ways from conventional foods.

Specific biases and silences in the research methods are also points of concern. Data gathering through snowball sampling was fraught with difficulties and biases. The most obvious bias is toward those participants who are well-connected, particularly those who actively market or network with more formal organizations, a general problem with snowball sampling (Erickson 1979). The bias towards formalization also overtly excludes most consumer perspectives from the data. The unwitting side-effect is a geographical biasing toward urban spaces and away from rural spaces, as much of the local food links in rural places are less institutionalized and formal and more individual and informal. It is a troubling side-effect, as it precludes thorough analysis of connections between rural local food production forces and the broader forces of rural restructuring outlined by a wealth of other literature (Cochrane 1979; Cronon 1991; Page and Walker 1991; Lighthall and Roberts 1995; Lobao and Meyer 2001) over the past decades and centuries. More specifically, it would have been very interesting to study the relationships between local food marketing and farmer innovations and agency as a

way of building on the work of others (Lighthall 1995; Lighthall and Roberts 1995). Another side-effect is the marginalization of direct producer-consumer relationships through farmers markets, CSA programs, and agri-tourism from the data gathering. These biases are not as limiting as they might seem: as more- and less-well connected perspectives were both thoroughly represented in the data, the consumer perspective is evident in my participatory observations and some of the forthcoming spatial analysis, and rural and direct marketing spaces were explored through their relations with the more formalized networks. The important problem related to these biases is that they limit important comparisons between producer and consumer, rural and urban, and informal and formal perspectives on local food. It is hoped that future research can fill in some of these gaps.

Other more theoretical biases exist that have largely been discussed in the body of this chapter. These include the reductionism of structural analysis, the absence of political considerations in analyzing the social and values embeddedness of local food projects, and the tendency toward a proliferation of conventions, values, spaces, and politics as explanatory themes. Conventions theory and spatial analysis are also not very dynamic frameworks, focusing on stable spatial configurations and ordered behaviors as opposed to dynamical reconfigurations. These theoretical paradigms are more appropriate for studying the institutionalization of local food than its tenuous and revolutionary aspects.

Where does this leave us? Practical limitations of research dictate some level of compromise. This combination of research methods has been developed, with compromise in mind, as a tentative attempt toward linking multiplicity and contestation in the local food movement to its wider geographical outcomes. It is especially attuned to the institutionalizations and more formal economic arrangements among local food systems of provision, featuring the social construction of local food, the extension of these social constructions through networks of relationships, and the politics of the relationships that ground such social constructions and values in the production of spaces. Triangulation within data gathering and between the analytical frameworks mitigates some of the concerns about the validity of data and the patterns identified. Yet,

the approach is still a patchwork. The methodological question that remains is: is there anything in these methodological adaptations and innovations that contributes to a better understanding of local food in this study region, and that could be incorporated into future study? The final chapter of this dissertation will attempt an answer to this question, after having applied the methods of analysis outlined in this chapter in a series of four results chapters. The outline of those chapters is provided below.

3) Agenda for Using the Methodology

The remaining bulk of this dissertation largely consists of four chapters presenting the local food movement in Eastern Kansas from the different methodological perspectives developed in the last two chapters. Chapter Four presents a review of conventional food systems in Kansas before presenting an overview of the local food participants, food types, and commodity chains in the study region. Chapter Five identifies a number of structurally cohesive communities and sub-communities within the broader Eastern Kansas local food network, while noting some of the consistencies and divisions of value frames within these communities. It also depicts the geographical distributions of these communities throughout the study region. Chapter Six organizes local food along the lines of typical local food pathways, while it thoroughly engages a conventions analysis to understand the different value frames of local food economic relationships in each of the pathways. It also entertains readings of market spaces for local food through the “worlds of production” framework. Chapter Seven performs a spatial analysis of some of the important sites of local food identified in the previous chapter’s network and geographical analyses. It is in this chapter that some of the developmental politics and exclusions of local food are revealed through the politics of spatial development.

This series of chapters will reveal a number of important lessons for researching the outcomes of food localization strategies. The combination of conventions and network analysis offers the possibility of representing the intensive and extensive strategies, alliances, and divisions among local food participants. Network and more general spatial analysis might bridge spatial projects in-place with diverse actors in other places toward inter-scalar representations of local food. Finally, conventions and spatial analysis can

also contribute to an understanding of the diverse values and spaces differentiating local foods, as well as the values and spaces that might hold the most purchase for forging successful coalitions in the growth of the local food movement. All of these potential lessons are important for identifying successful local food agendas and assessing the environmental, social, and economic outcomes of the movement.