REPRISE ON COMMODITY SYSTEMS METHODOLOGY

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INTRODUCTION

This paper urges the elaboration of commodity systems methodology based on inductive methods in empirical research. Expanding an earlier suggested methodology (Friedland 1984), three new methodological arenas are identified: the scale of commodities, sectoral organization and the state, and commodity culture. Before turning to these three arenas, the paper examines the current state of commodity and commodity systems studies, theories, and methodologies.

While agricultural commodities and commodities systems have become, in recent years, an increasing foci of study by sociologists, this has not always been the case. If one examines the two "pioneer" books that helped to crystallize the sociology of agriculture, Rodefeld, Flora, Voth, Fujimoto, and Converse (1978) and Buttel and Newby (1980), a reader would be hard put to find either commodities or commodity systems as a preoccupation of the contributors to the two volumes. Similarly, Newby's assessments of rural sociology (1978; 1980; 1983), while noting the rise of the sociology of agriculture and beginning to summarize material on commodities, contain no mention of commodity systems. This area of study had not yet appeared upon the scene.

The analysis of commodity systems [1]as part of the sociology of agriculture is now an accepted part of the field. Agricultural economists have long focused on the economics of particular commodities but have been less interested in studying commodity systems, let alone social, political, or cultural aspects of commodities. A notable exception is Goldberg (1968) but most commodity chain studies by economists are usually devoid of human beings.[2]

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1. The nomenclature in this field has not yet settled down. Three terms can generally be found that encompass what has been designated as _commodity systems_ analysis. The PEWS (Political Economy of the World-System) Group refers to commodity chains (Hopkins and Wallerstein 1986; Gereffi and Korzeniewicz 1994). The French, who initiated studies in this arena prior to others, refer to "filieres" which can be translated as "channels" (Bertrand, Laurent, and Laclerc 1984; Lauret 1983). I can detect no clear conceptual differences between these three terms and, in this paper, will use all three interchangeably. A fourth term, "systems of provision," is also probably equivalent; see below and Fine 1994.

2. See, for example, CGPRT Centre (1988).

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In contrast, rural sociologists had, for the most part, abandoned research on agricultural matters (Friedland 1982) and, as a consequence, devoted little or no attention to agricultural commodities and their production. This changed once the sociology of agriculture became an accepted part of rural sociology during the 1980s.

Buttel, Larson, and Gillespie (1990), summing up *The Sociology of Agriculture*, recognized commodity systems analysis as a significant segment of the "new" sociology of agriculture. A decade later, Buttel (2000:9) sees commodity studies as "one of the major emphases of 1990s agrarian studies."

A survey of the literature indicates that, while there has been a significant volume of empirical research over the past two decades, more has been on specific aspects of commodities rather than on commodity systems. Commodity analyses often utilize some approaches taken from commodity chain studies but rarely attempt to take on the totality of a commodity. There is good reason for this; even simple commodity filieres are very complex and their analysis can involve considerable time and space. As Dixon (2000:14) puts it, "a single commodity could consume a life-time's research …."

One way to understand the difference between a commodity study vs. a commodity systems analysis would be to compare processing tomato harvest mechanization and lettuce harvesting. A cluster of tomato studies (Friedland and Barton 1975; Thompson and Scheuring 1978; de Janvry, Leveen, and Runsten 1980) are essentially commodity studies focused on one particular aspect of the commodity, mechanized harvesting and its social consequences. Similarly, one study of lettuce harvesting (Thomas 1985) examines the effects of citizenship and gender on the labor process. An earlier lettuce study (Friedland, Barton, and Thomas 1981), in contrast, considered lettuce as a distinctive system, projecting the social consequences of potential mechanical harvesting. To make the projections, the authors examined the network of social relationships in the lettuce industry and relationships of production to nonagricultural aspects of life.

Yet another way of considering the distinction is to examine how several different researchers have focused on particular aspects of commodities, sometimes being system analytic, but in other cases focusing on a particular aspect of a commodity. Wells (1996), for example, centres her strawberry commodity analysis on labor but also deals with ethnicity, grower types, worker-grower relations, and patterns of paternalism. Other aspects of the strawberry commodity system are not dealt with, especially strawberry distribution and marketing. Morgan's (1980) study of the grain complex overlooks labor and contains barely any mention of growers; instead Morgan concentrates on the "merchants of grain," the global trading companies that dominate the world grain trade. On the other hand, by focusing attention on the state, the transition from fordism to postfordism and environmental issues in their tuna study, Bonanno and Constance (1996) make their study more of a commodity system analysis than a commodity study. The same can be said for Stanford's (1994) examination of Mexico's cantaloupe export sector.

There is no intention to make invidious distinctions between commodity studies

versus commodity systems analyses. The latter takes far more time. Further, analysis of commodity systems will often depend upon clusters of commodity studies. It is important to encourage the systematic comparative analysis of commodities, something that the Political Economy of the World-System (PEWS) group undertook in their 1992 conference (Gereffi and Korzeniewicz 1994).

If commodity and commodity systems analyses are now an established part of the sociology of agriculture, less attention has been given to methodology. Working in a very different tradition of agricultural administration, McGinity (1979) argued for the use of a systems approach to manage agroindustrial development, setting out seven stages: farm supply, farming, consolidation, processing, wholesaling, retailing, and consumption. Friedland (1984) set out the first sociological attempt at methodology. Hopkins and Wallerstein (1986), possibly anticipating the emergence of actor network theory, see commodities as networks of labor and production crossing multiple frontiers and resulting in a finished commodity. Busch (1990), addressing the French filiere approach, sets out a methodology centred on the role of science and technology and, by emphasizing the actor, began the application of actor network theory to agricultural matters. Among other things, Busch suggests eleven rules to guide commodity systems analyses: there is nothing natural about nature; there is nothing natural about society either; production neither starts nor stops at the farm gate; commodity chains have values embedded in them; the weakest link in the chain will stop commodity production; science, technology, and bureaucratic decisions can create and recreate commodity chains; commodity chains have histories; commodity chains have geographies; the power relations in commodity chains change when an actor in the chain attempts to modify it; and finally, commodity chains do not exist (they are conceptual creations).

Two recent researchers – Dixon (1999a; 1999b; 2000) and Wright (1999) – agree that the omission of consumption in Friedland's original methodology leaves an important gap. This leads each independently to emphasize consumption and culture in studying discrete commodities. Dixon calls for inclusion of two additional dimensions: regulatory politics and state-producer relations, and product design, as well as setting out five components of consumption: tertiary production practices, the means of access, delivery dimensions, the eating environment, and the experience of consumption. More will be said about Dixon and Wright below.

A peculiarity of commodity and commodity systems studies has been that they often begin with either an empirical or a social problem. It is the problematic that drives the research more often than theoretical preoccupations. The various tomato and lettuce studies, for example, developed out of agricultural mechanization and its social consequences, an issue which preoccupied agricultural engineers and social scientists during the 1960s and which led to a suit against the University of California for its enthusiastic support for mechanization research (Friedland 1991). Many studies have their impetus from technological change and its consequences.

Some studies have focused on labor or the environment or the state, or another particularized aspect, in some cases, based on theoretical concerns generated elsewhere in the social science literature. Methodologies tend to be drawn

eclectically from a variety of sources. In other words, methodology has been built more on empirical concerns – how should one study strawberries or cotton or kiwifruit? – rather than from theoretical preconceptions. Methodology has been inductively developed rather than, as is sometimes the case, with research focused on theoretical issues where methodologies tend to be deductive.

The advantage of a priori or deductive approaches is that they stand on their own. This is an advantage when compared to empirically derived approaches, which usually require expansion or elaboration based on new empirical findings. In this respect, there is a need for an expansion of the methodological framework set out in the 1980s based on studies of iceberg lettuce and processing tomatoes. Friedland's (1984) paper set out five basic foci for research: production practices or labor process; grower organization and organizations, how growers organize the labor process and organize themselves with respect to other actors; labor, the character of the labor market, labor supply, and the ways in which workers organize themselves with respect to production; science production and application, how scientists are mobilized and conduct their research and how this affects commodity production; and marketing and distribution, how commodities are handled once they pass beyond the farm gate.

Before turning to the three new methodological arenas, a review of research relevant to filiere analysis will be undertaken.

COMMODITY STUDIES AND COMMODITY SYSTEMS ANALYSIS: THE STATE OF THE ART

This section examines research developments bearing directly or indirectly on the evolution of commodity and commodity chain analyses. Directly concerned are studies by Dixon and Wright and globalization studies. Less direct are two other developments: Ben Fine's "systems of provision" and Actor Network Theory.

Growing interest in commodity studies and commodity chain analysis has, in all likelihood, been a consequence of two major developments: the industrialization of agriculture and the globalization process. The past two decades have witnessed a growing literature on various aspects of commodities although there has not been much of a focus on methodology.

The cluster of studies that is most impressive is that utilizing specific commodities to analyse a particular problematic. For example, globalization has been a central problematic in a number of studies from apples to shrimp, sugar, and tomatoes. Antipodean researchers in Australia and New Zealand – most often geographers and sociologists – as a result of being proximate to export-oriented agriculture, have been particularly enthusiastic in this respect. As well, several studies have used commodity chain analysis, either explicitly or implicitly, to examine commodities historically. Notable in this respect is Mintz's (1985) study of sugar and Roche's (1999) examination of the frozen meat trade.

AMPLIFYING AND EXTENDING COMMODITY SYSTEMS METHODOLOGY

Research by Dixon (1999a; 1999b; 2000) and Wright (1999), respectively on the chicken filiere in Australia and burley tobacco in Kentucky, while utilizing Friedland's (1984) methodological suggestions, found significant omissions and suggested elaborations and augmentations.

Wright demonstrates how the entry of new actors – nonconsumers – into the tobacco filiere has involved the state in contradictory representations. The state has had historic relationships with tobacco to encourage accumulation as well as to provide an important source of state revenue. Having served the accumulation function historically, the state has responded to anti-tobacco forces thereby fulfilling a contradictory legitimation function. Wright and Dixon have demonstrated the importance of following the filiere from producer to consumer. Dixon, in particular, shows the importance of intermediaries between production and consumption and their effects on consumption. Both argue for following the commodity through to its final denouement when the commodity is "destroyed" in consumption.

Wright (1999:13) raises interesting issues around commodity culture – or, as she prefers to call it, the "culture of commodity production." The peculiar status of tobacco should perhaps be noted at the outset: tobacco is an agricultural commodity but agriculture is often defined as the production of food and fibre – of which tobacco is neither.[3]

Wright demonstrates the powerful economic and cultural components among the producers of burley tobacco. Burley "tobacco remains the 'golden leaf' in Kentucky because no other legal crop approximates its economic value [whose] production and processing approximates nearly six percent of the state's entire economy" (p. 300). Further, "…tobacco was the commodity that shielded many small farms from the national farm crisis of the 1980s" (p. 295). Thus, the material base of the commodity is economically and socially important. In addition, there are the producers' cultural commitments: "it is firmly etched into local communities and marks a long-standing legacy" (p. 300).

Change has been produced in the tobacco system less by consumers than non-consumers who consider tobacco an addictive carcinogen, a threat to consumers but also to nonsmokers. While one might quibble with Wright about the influence of nonconsumers on consumption, there is no gainsaying their effects on the tobacco filiere.

Dixon (1999a; 1999b; 2000) pursues the limitations of Friedland's methodology even further (as well as beyond the paper delivered in 1997 from which the present paper has been derived).[4]

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3. Nor, of course, are other similar agricultural products such as coca leaf or opium poppies.

4. Dixon (2000) has an expanded and empirically detailed version in her dissertation, which is summarized in more accessible sources (1999a, 1999b). It is to be hoped that both researchers will make their empirical findings available in book form in the near future.

Calling for an elaboration of Friedland's original five areas, she includes two new components of production: product design and regulatory politics. Besides calling generally for attention to consumption, she specifies five distinct arenas of research: tertiary production practices, means of access, manner of delivery, the eating environment, and the eating experience (Dixon 2000:Table 3.2, p. 67).

Dixon's problematic is: where does power lie in the Australian chicken complex? Dixon conducted interviews and perused literature through the length of the filiere, from growers to processors, commodity organizations, supermarkets and other retail outlets including fast food chicken stores, and on to nutritionists, researchers and others who influence chicken consumption (and other foods), and regulators and politicians. This is, without doubt, the most comprehensive commodity chain analysis I have seen, probably made feasible because Australian chickens are an "enclosed" commodity, almost entirely isolated from global food circuits and because of the comparatively small size of Australia's population.

Rejecting "the authority of the consumer" approach of Keat, Whitely, and Abercrombie (1994), Dixon shows that effective power and control are neither at the beginning of the filiere with growers or processors or at its end, with consumers. Power is located in between, with supermarket retailers and, to a more limited extent, with fast food producers but taking into account nutritionists, market researchers, and specialists in cultural symbol manipulation.

Dixon concludes her research by making a dual argument for a possible 'third regime of reflexive accumulation', adding to Friedmann and McMichael's (1989) two-food regime argument. She also promulgates the need for incorporating a cultural economy perspective to parallel Marx's three circuits of capital (production, realization, and reproduction) with three circuits of culture (commercial, social, and emotional) (2000:Table 10.3, p. 253).

Space does not permit an extended discussion or critique of Dixon's theoretical and methodological suggestions. Suffice it to say that her empirical data have generated an important contribution to commodity systems analysis.

BEN FINE AND "SYSTEMS OF PROVISION"

The argument to include consumption in commodity systems analysis is compelling but there are significant problems inherent in its inclusion. One major argument for a consumption focus has been made by Ben Fine (1994) and his associates. A later work (Fine, Heasman, and Wright 1996) demonstrates the difficulties that can be encountered.

In his 1994 paper that generated a storm of criticism, Fine broke with the main approach in British consumption studies of the 1980s. That approach considered any and all forms of consumption to be the focus of analysis. A good example of this can be found in the special issue of *Sociology*, the journal of the British Sociological Association, on the sociology of consumption (Vol. 24, No. 1, February 1990). This issue contained analyses of consumption of tourism (Urry 1990), medical care (Busfield 1990), housing (Savage, Watt, and Arber 1990), control of money and household spending (Pahl 1990), and food (Beardsworth and Keil 1990).

This approach, which considers all forms of consumption, Fine regards as "horizontal" and specifically rejects (Fine et al. 1996:62) in favour of "vertical systems of provisions" (SoPs) (seemingly the equivalent of what we have been referring to as commodity systems). Whether Fine would argue for vertical SoPs in all commodities is unclear but he makes the case for vertical analysis of food because of its "organic" character, i.e., because of its biological character, food is subject to spoilage. Fine sees food production linked to consumption through vertically integrated chains of activities beginning with inputs to agriculture and including processing, transportation, distribution, marketing, and consumption. While he includes agriculture in the food SoP, he rejects the idea of a political economy of agriculture "decisively" because "…agriculture and rural restructuring [are]… heavily determined by factors further, possibly much further, along the food chain, whether these be in banking, processing, retailing or even consumer concerns over health and the environment (Fine 1994:520).

While anyone knowledgeable about agriculture would agree that sectors other than agriculture are important, the cavalier dismissal of a political economy of agriculture is hardly sustainable especially since Fine uses research based on agriculture to provide material for his analysis of SoPs.

Fine et al. (1996) explore three SoPs: sugar, meat, and dairy. The first problem surfaces with the meat system: "Is it appropriate to differentiate between the separate meats as SoPs – the poultry, beef, pork and sheep systems – or do these constitute a single SoP…?" (p. 202). To answer this dilemma – where there are differences in the agricultural processes between the four commodity forms – Fine and his colleagues initially consider vegetarianism and conclude that "meat is heterogeneous." "Paradoxically, then, while criticizing the existing literature for homogenizing meat at the level of consumption," Fine et al. treat meat as "a single SOP, encompassing a variety of meats and meat products" (p. 202).

When we turn to the chapter on the meat system, we learn only fragments about its agricultural components let alone anything about its inputs. Fine delineates two distinct meat SoPs in Britain "separated by the Second World War" (p. 202). Focusing on agriculture, we learn that, in the first SoP, beef was Britain's "core meat." In the current meat SoP, we are informed that poultry has been industrialized but not what this means at the point of production. The authors turn immediately to consumption providing no information about other segments of the meat SoP. Later, brief mention is made about "a tendency toward specialization (most obviously in chicken and pig 'farming'…" (208) but we learn nothing about what this specialization is, how many "specialists" there are, occupations, or stratification.

Although the chapters on sugar and dairy vary somewhat from the meat chapter, a similar truncation of agriculture is maintained. Thus, the insistence by Fine that there is a need to encompass the totality of SoPs turns out, empirically, to be an illusion.

There is no question that researchers are free to define research problems in any way they choose. Making claims for inclusiveness without empirical delivery, however, leaves grounds for concern. This suggests a second critique of Fine's SoP

approach. The social relationships embodied in any commodity are complex, especially if we are dealing with commodities that are in broad production and consumption. There are undoubtedly simple commodity systems in the United Kingdom but meat, sugar, and dairy are hardly simple. Fine and his colleagues provide useful information about some aspects of their commodities but any claim for comprehensiveness or inclusiveness is overwrought. It can also be argued that, while events within agriculture are substantially determined by forces outside it, this hardly means that a political economy of agriculture (initial production) is unworthy of consideration. Precisely because agriculture represents the initial stage of being "organic," agriculture has its own rhythms, dynamics, and problems and its political economy can contribute to the analysis of the political economy of food. Self-praise in describing this research as "landmark" and constituting "a bold claim" (p. 3) hardly seem justified.

GLOBALIZATION

Changes in the distribution and marketing of some agricultural commodities as they have become globalized suggested another look at filiere methodology. It is true, of course, that some agricultural commodities have been in wide spatial circulation historically. Sugar, for example, spread spatially with the development of mercantilism and colonialism (Mintz 1985). But colonial production was geared primarily for metropolitan markets of the colonial powers and not for global distribution: British islands in the Caribbean fed sugar to Britain; French production in the Caribbean and Africa was intended for France; Cuban production was linked to U.S.

Hopkins and Wallerstein (1986), utilizing historical periodization, indicate the utility of historical analysis of commodity chains, anticipating "turning points" (p. 230) of economic expansion and contraction when change might be taking place in the chains.

To the extent that there was distribution of agricultural commodities until recently beyond metro nations, it was either limited (high quality and expensive for very wealthy people) or bulk commodities such as grains (for example, wheat produced in Russia and eastern Europe and exported to France and Britain; wheat from Argentina, Australia, California and later the midwest U.S. and Canada exported to Europe and elsewhere).

During the 1980s a new global process developed in foods: the globalization of fresh fruits and vegetables grown in a variety of locations (Mexico and Central America, South America, New Zealand, Australia, Southeast Asia, and South Africa) for markets primarily in the northern hemisphere (Cook 1990; Friedland 1994). This phenomenon is primarily south-to-north with production from the southern hemisphere feeding markets in the northern hemisphere although, in the last few years, some reversal in movement has begun.[5]

5. Korzieniewicz, Goldfrank, and Korzeniewicz (1995) challenge the south-to-north argument by showing the trade in fresh fruits and vegetables and wine still occurs primarily between northern core nations. Undoubtedly accurate, this approach does not give adequate

Chilean table grapes began the first mass development of this new market extension. Where table grapes were unavailable in North America and western Europe between November and May, Chilean production marked the elaboration of a global production/distribution system; table grapes became available year-round.

Expansion of growing seasons has been going on for a long time. After the Second World War, California grapes became available to U.S. and Canadian markets in late June. With the development of early varieties and plantings in the desert valleys of California, the table grape season began at least a month earlier. Better storage capability and late varieties extended the table grape season into December. Beyond December, there were, until the early 1980s, relatively few table grapes available except for specialty grapes grown for high-cost markets. Chilean production "massified" grapes to a commodity available year-round.

Globalization spread during the 1980s with the elaboration of nontraditional export agriculture in locations such as Costa Rica producing broccoli for the U.S., Kenya and Zimbabwe producing mange tout (snow peas) for Great Britain, New Zealand producing kiwifruit for Europe and North America, to mention only a few. And the banana system, which had originally tied colonies to metro areas underwent a transformation as banana companies such as Chiquita, Dole, Del Monte, Fyffe, Pomona, and others shipped bananas to locations beyond their original metro markets.

These developments have encouraged considerable research on agricultural commodities and their long-distance movement. Globalization, and the increased scale of commodity distribution, has also increased the extensiveness of food safety problems. As commodity systems have extended beyond the local or regional or national levels, when a food scare such Mad Cow disease, e-coli contamination, or hoof-and-mouth disease occurs, what was once considered to be a local problem now becomes global in character. This process is amplified by the extensiveness of media coverage which brings news of food safety problems to larger and larger audiences.

ACTOR NETWORK THEORY AND METHODOLOGY

By the late 1980s, what had emerged was a very different system of production/distribution and, hence, very different sets of social relations. These changes restructured production/distribution systems, suggesting additional arenas of research in commodity systems. Here I turn to new theoretical developments that some scholars have argued could enhance commodity chain studies: actor network theory (ANT).

Actor network theory (henceforth ANT) has generated a substantial literature in recent years. I will utilize one summary (Law 1992) to consider the potential utility of ANT to commodity systems analysis. Essentially, actor network theory (ANT) is a theoretical approach to the specification of institutions with one major

recognition to the counter-seasonality of the south-to-north fresh fruit and vegetable trade.

augmentation, the inclusion of nonhuman things. Law (1992:381) states that "the social is *nothing other than patterned networks of heterogeneous materials* …[including] machines, animals, texts, money, architectures – any material you care to mention" (emphasis in the original).

When undertaking the analysis of a filiere, researchers will find that even simple ones involve an enormity of things: humans, organizations, the state, the biological character of the "thing." Certainly all of these elements are bound up in commodity chain analysis. The question a researcher must ask is: how much importance should one give to this element or that factor?

ANT researchers have used the approach for the analysis of scientific networks. Does this mean that ANT will provide stimuli to commodity researchers that will open areas they might not have thought of? Certainly any commodity in modern society is enmeshed in a network of entities to get produced; but what particular benefit does the theoretical approach yield to justify any claims to its application to filiere analysis?

In attempting to assess the potential value of ANT approaches, an examination was made of one such application to the study of rapeseed/canola, a seed of limited utility until a scientific network was mobilized to remove certain negative qualities which then converted rapeseed into a major globalized commodity (Juska and Busch 1994; Busch and Tanaka 1996; Busch and Juska 1997; and Tanaka, Juska, and Busch 1999).

Busch and Juska (1997) are particularly helpful in setting out an actor network methodology (ANM) which I would distinguish from ANT itself. Busch and Juska (1997) develop two distinct network analyses. The first (p. 697) sets out four institutional networks: military, pharmacology/nutrition, agriculture, and chemistry which include formal organizations, laboratory animals, pharmacological and chemical "things" and processes, and the rapeseed plant itself. The second network (p. 700) is based on five institutions (Agriculture Canada, the University of Manitoba, the University of Alberta, Svalof AB of Sweden, and the University of Guelph) but is composed of individual scientists who did the research necessary to make rapeseed into edible canola. Busch and Juska provide a useful exercise which examines the individuals and institutions that took an agricultural product of limited utility and converted it into a widely used commodity. At the same time, several things become clear as limitations of ANM.

First, ANM works best at the micro level. At the macro level, Busch and Juska's "first network" is more amorphous than at the micro level, their "second network." Second, ANM works best when a system is undergoing change. When a system is "stable," the network is taken for granted and reconstruction of its creation can be difficult. Third, ANM works best when a change is successful; when an attempt at change fails, it is not always possible to determine which people, organizations, institutions, or "things" failed to be enlisted. Finally, ANM cries out for visual summarization, i.e., making charts and diagrams that show principle institutions and individual actors, a significant aide in conveying complex analyses to readers.

In summary, ANT appears to be more useful as methodology than as theory.

But ANT and its methodological application raise a second issue because of its inclusion of entities beyond human beings, in particular with respect to agricultural commodities, the question of 'nature'. Agriculture, as has been noted by many scholars, involves the interaction of nature and human beings. I will not attempt to subsume the extensive literature on this matter; suffice it to note that a claim has been made that the political economy approach has depriviliged nature in its emphasis on humans, institutions, economy, and society. FitzSimmons and Goodman (1998), for example, call for "nature" to be brought "back in" to social theory by contesting its abstraction from "society" (p. 194). This is unexceptional advice. Anyone who studies commodities such as tomatoes, lettuce, cherries, grapevines and their various commodity forms, or citrus, must take account of the fundamental biological characteristics ("nature") of the commodity. Some agricultural products are vulnerable to spoilage whereas others are storable for considerable periods. Cherries are determinate (all become ripe at the same time) whereas tomatoes, in their "natural" state (not manipulated by human beings) tend to be indeterminate (ripen sequentially). Anyone contemplating mechanized harvesting must first overcome the "natural" indeterminacy of the tomato vine.

Similarly, each of the three main commodity forms of the grapevine – fresh table grapes, raisins, and wine – has very different biological characteristics. Human beings manipulating natural biological systems must take "nature" seriously – as must the social scientists who undertake to study agricultural production/consumption systems.

Nature doesn't have to be "brought in" if a commodity study is done properly. While all of the things human beings manipulate have "natural" elements, in agriculture this is particularly the case. This is not to argue that ANT or "nature back in" theorists are incorrect; rather that theoretical parsimony argues that one does not use more theory than one needs to explain or examine a particular empirical phenomenon.

We turn now to a consideration of three arenas that augment Friedland's original methodological suggestions.

ELABORATING THE METHODOLOGY: SCALE

As research began on globalization of fresh fruits and vegetables (FFV), one new dimension, scale, became significant for filiere analysis. Scale (Wilson and Wilson 1968:25–30) refers to a geographic or spatial dimension and to social relationships and their intensivity. In traditional societies, for example, range or physical spatiality is usually limited while social relationships are direct, primary, intensive, with high salience for actors. In complex modern societies, scale is much more extended, indirect, and involves much greater numbers, but the salience of relationships is attenuated.[6]

Applying scale to agricultural commodities reveals the differences which can be

6. This is, of course, the classical societal dichotomy set up by the founders of sociology.

seen by comparing several commodities. Bananas, a tropical fruit, are produced in a great many locations but are distributed in two very different ways: many bananas are produced for local distribution and consumption but others are involved in long-distance global circulation, from Caribbean, African, southeast Asian, Central and South American production locations to North America, western Europe, and Japan (often via U.S.-based transnational corporations). In contrast, apples are a temperate zone commodity mainly in local or regional distribution. Because they grow widely in both northern and southern hemispheres and storage techniques are well developed, there is some counter-seasonal movement of apples from the southern hemisphere to the north but it is relatively limited compared to bananas. New Zealand and South Africa are the two primary locations for this movement; New Zealand has been particularly successful in this trade because of its "new" varieties that have not traditionally circulated in the northern hemisphere (McKenna, Roche, and LeHeron 1999; McKenna 2000). Washington State is also a specialist in supplying apples outside the U.S. to markets in Japan and elsewhere in Asia but, like South Africa, has lagged in introducing new varieties (Sonnenfeld, Schotzko, and Jussaume 1998).

Other commodities provide different examples. Potatoes are hardly in any global movement, being produced nationally for national markets with some trade across national boundaries to adjacent national markets. Some Canadian potatoes can be found in the U.S. and vice versa or British and Dutch potatoes may be exported to France or Germany – or vice versa, but, on the whole, the movement of potatoes is circumscribed. In contrast, after many decades of pure localism, kiwifruit globalized during the 1980s from New Zealand but rapidly relocalized with production in Italy, Spain, the United States, France, and elsewhere.

Because bananas move internationally over long distances and are perishable, they require close ("just-in-time") integration of growing, harvest, ground transportation, shipping, and "ripening" near the point of retail sale. Social relationships in the banana commodity system are spatially more extensive than with apples because of the necessity to coordinate many different dispersed activities. Social relationships may be more intensive in apples but are more limited in range than bananas. In movement through space, some agricultural commodities, impose qualitatively different levels of social organization and social relations than other commodities which are more limited in circulation.

There is an historic dimension to this phenomenon. As previously noted, it was not until the 1980s that table grapes became "massified" on an annual basis. In the U.S., citrus became a massified commodity a century ago when technological developments in storage and transportation and a national distribution and marketing system was organized. By the end of the second world war, fresh oranges were an established "national commodity" in the U.S. This was also the period in which orange juice became converted into a quotidian commodity as the technology of concentrating juice and transporting it in frozen state was resolved.

Each commodity system, in other words, develops a distinctive history as distribution, marketing, and scale change, a process characterized by uneven

development. In the eastern U.S., for example, consumption of iceberg lettuce on an annual basis began much earlier than tomatoes. By the end of the second world war both commodities were in year-round distribution. Other commodities were available during short seasons; cherries and stone fruit, for example. Many commodities have now moved into year-round availability through the extension of growing seasons, the development of new varieties, or new production locations. Others, such as cherries, have seen some extension of their seasons but are still largely limited temporally.[7]

As production seasons are extended or production locations develop in different hemispheres, marketing requires the establishment of reliable and predictable financial and social relationships.

A commodity, in other words, if it is to be analysed, should be studied historically and its spatial and social relations dimensions must be examined.

SCALE AND COMMODITY "COMMUNITIES"

One consequence of differentials in scale is the variability in the organization of commodity communities. Community has two meanings, spatial and functional; while community often refers to people living in a common space, especially one with political dimensions, it also refers to groups of people sharing a common function or interest such as the "financial community," "academic community," the "global" or "human community."

One way to examine commodity "communities" is to consider communities constructed around commodity systems that share a common plant. The grapevine, for example, contributes to three interrelated but distinct commodity chains: table grapes, raisins, and wine.

In table grapes, the community of growers is dispersed over some distance (approximately 300–400 miles). It consists of growers and grower-shippers; workers in preparatory activities, harvesting, and packing; buyers (mainly supermarkets but also buyers at great distances such as Asia); and regulatory bureaucrats. Growers and grower-shippers constitute a coherent and organized grouping even though they are involved in competitive economic relations. Workers are organized to a degree as a community since the packing of table grapes and some parts of the growing process (girdling) require considerable skills. Workers became more of a community when they were organized by Cesar Chavez in the 1960s who made their social relationships vis-a-vis growers more coherent. Buyers constitute a vaguer community since they usually purchase many different fruits and vegetables and deal with many growers and shippers. Buyers' major point of reference, or "primary community" are the supermarket chains (or other organizations) for which they purchase grapes. In contrast, regulatory bureaucrats are a very tight community; their numbers are small and they are in continuous contact with one another protecting and elaborating the organizational system that

7. In Europe, cherry production in Norway comes relatively late in Europe's summer permitting export of cherries well after the harvest of cherries further south has been completed (Eurofruit Magazine, 9/93:35–39).

maintains relationships between growers, workers (especially when workers are organizing), transportation, and other entities in the filiere.

Raisin grapes display a very different picture. Because raisins are not perishable like table grapes and because all raisins in the U.S. (constituting 40 percent of world production) are produced in a small geographical space in California's San Joaquin Valley within a 50 mile radius of the city of Fresno, spatial contiguity makes for a relatively tight grower community which has been divided historically along ethnic lines (although this has faded considerably in the past several decades). Raisin grape workers are a much vaguer community than table grape workers since raisin harvesting requires very large numbers of workers for brief intensive periods. Because raisin harvesters are both local and long distance, the basis for worker solidarity is attenuated. Since raisins are used in a great variety of ways, the market relationships beyond production are dispersed and it is difficult to talk about a "community" of raisin buyers. As with those involved with table grapes, regulatory bureaucrats are tiny in number and are in continuous and intensive relationships with one another and with growers.

Wine shows the greatest amount of spatial and social dispersion. California is by far the main wine producer but wine is currently made commercially in over 45 of the 50 U.S. states. If we limit ourselves to California to simplify the analysis, we can see different communities among wine grape growers and wine makers. Despite several campaigns by an organization of winegrape growers to create a joint effort with winemakers to expand the consumption of wine, the differential interests of these two groups have precluded such organization.

Because some regions in California make premium and ultra-premium wines while others make only 'ordinaries', community among winemakers is limited. Wine producers such as Gallo in the San Joaquin Valley see little community of interest with tiny ultra premium boutiques in the Napa Valley. The Napans, in contrast, are able to cooperate and create a Napa winemakers' community for some purposes (promotion of Napa wines) while competing in marketing (Conaway 1990; Lapsley 1996). Wine grape workers also have differential interests from winery workers precluding common activities. Field workers work in fields seasonally whereas winery workers usually live in urban circumstances working under factory conditions. Field workers are presently not organized (for the most part) into a union whereas winery workers are.

The wine market is highly differentiated. The various marketers included wine specialists, supermarkets, liquor stores, state alcohol authorities, direct sales to consumers from wineries, etc., and preclude coherence as a community. The regulatory apparatus is complex and dispersed because the legislation that eliminated Prohibition provided that, in addition to the federal government, each state could set regulations with respect to alcohol consumption. Finally, wine industry organizational bureaucrats are divided by the various functions of their organizations so that this community is more tenuous than found in table grapes or raisins.

ELABORATING THE METHODOLOGY: SECTORAL ORGANIZATION AND THE STATE

Sectoral organization refers to the political economic location of a commodity. Every commodity, agricultural or nonagricultural, exists in some economic sector which differentially involves the state. This methodological issue represents an attempt to "bring the state back in" to filiere analysis.

The state has usually been present in empirical analyses of commodities but its role has been more implicit than explicit. However, the state should never be taken for granted, especially since its intervention and involvement in regulation and support are ubiquitous in modern capitalist economies. State intervention in commodity production, and its consequences, has long been present. In Great Britain, for example, the export of grain was forbidden as early as the fourteenth century to keep prices low. The battle in English politics over the corn laws of the 1800s involved the state first favouring agricultural landowners and subsequently industrialists (Barnes 1930).

In the United States, tariffs represented an early example of state involvement in agricultural production. Later forms of state support to agriculture came through legislation such as the Homestead (1862), Morrill (1862), Hatch (1887), and Smith-Lever Acts (1914). However, it was not until the 1930s, during the administration of Franklin D. Roosevelt, that systematic and continuous involvement of the state began with the elaboration of support to basic commodities, the installation of marketing order legislation at the federal and state levels, and the elaboration of federally-supported irrigation programs.

In considering sectoral location of specific commodities, it is useful to utilize the economic sectors set out by O'Connor (1973): competitive, monopoly, and state. In agriculture, while most commodity systems ostensibly belong in the competitive sector, a closer examination of specific commodities raises questions as to how to accurately characterize different segments of each.

If we consider grain, for example, a commonsensical consideration would position grain as consisting of several competitive commodity systems; corn and wheat alone involve tens of thousands of agricultural producers. At the level of production, wheat and corn should be characterized as competitive. However, as Morgan (1980) makes clear, at the level of distribution, five transnational corporations dominate the global trade in grain, placing distribution in the monopoly sector.

If we consider the three commodity forms of the grapevine, table, raisin, and wine, the complexities of economic sectors are again revealed. Table grapes are very much in the competitive sector although state-subsidized irrigation, science, and a marketing order play a significant role in the organization of the commodity. Raisins, like grapes, are produced by some 4,000 growers which would indicate belonging in the competitive sector. Yet raisins are organized by the growers in two organizations (Sun Maid, the Raisin Bargaining Association) and two marketing orders (one of which became extinct recently) so that the commodity operates essentially as a monopoly. This is because one marketing order, the Raisin

Administrative Committee, regulates flow to market thereby establishing order where, otherwise, raisin prices would be chaotic.

Wine poses similar complications. At the level of production and retail, wine is undoubtedly competitive. Historically, however, there have been periods in which wine functioned as a monopoly. Currently, wine production is oligopolistic with a handful of companies producing the overwhelming percentage of wine. This has not yet created a monopoly situation although at one period prior to Prohibition, wine marketing was dominated by a single company, and, between 1939 and 1974, because of the wine marketing order, a private California trade organization – the Wine Institute – monopolized two segments of the industry: the direction of scientific production and the shape of legislation affecting wine.

Sectoral organization creates considerable dilemmas for some commodities. Tobacco is a good case in point. This is a commodity in which one sector of the state provides a powerful regulatory apparatus while another sector of the state raises questions about the social value of tobacco. Burley tobacco's producers are many, small, and family-based while its processors are firmly in the monopoly sector (Wright 1999). Empirical reality confounds the neat placement of an entire commodity into a single sector.

It will undoubtedly be noted that, in the preceding discussion, no empirical examples of agriculture in the state sector were set out. This is because, in the American experience, no agricultural commodity exists solely in the state sector. Yet, the degree of state involvement in an agricultural commodity – and how it became involved, whether it remains involved, and its character – is an important element in the analysis of a commodity filiere.

As one example of how state involvement affects a commodity system, one might consider the ban on the importation of rice which the Japanese state maintained until recently even though domestic rice was far more costly than imported rice. This ban was only in part a function of concern by state bureaucrats about food security (that is, maintaining a certain level of local production so that a basic staple would not be overwhelmingly dependent on foreigners). Equally as important were the thousands of small-scale rice growers who constituted a backbone of support to the ruling Liberal Democratic party.

State involvement in commodity systems can be extremely variable. In the U.S., some basic commodities (wheat, corn, soybeans, tobacco, sugar, etc.) have benefited for decades through state involvement in the form of direct subsidies, price supports, or restrictions on acreage. Other commodities have received very different forms of support. It is always amusing to hear California growers complain about government support to Midwest commodities while being oblivious to their own forms of state support of subsidized water and science and the maintenance of legal structures that facilitate commodity organization. Indeed, it was not until federal and state marketing order legislation was adopted during the 1930s that powerful commodity organization emerged. This form of organization in milk, cotton, vegetables, and fruit was structurally dependent on the adoption of marketing order legislation.

Marketing orders in the U.S. can be established if 65 percent of growers or those with 50 percent of acreage (or vice versa) in a specific commodity agree by ballot to establish or continue a marketing order. Growers who want to establish a marketing order must therefore create organizations and organize other growers so that they will vote to accept the order. Marketing orders, it should be remembered, allocate limited powers of the state to organized groups of agricultural producers.

This structural form of state involvement is often "invisible" to growers, nevertheless it represents a significant element of state involvement in a filiere.

ELABORATING THE METHODOLOGY: COMMODITY CULTURE

Not every agricultural commodity – or nonagricultural, for that matter – generates an elaborated culture. Some commodities such as wine, tobacco, olive oil, for example, develop elaborate commodity passions and give rise to unusual aspects of commodity life. Other commodities might be characterized as ordinary, quotidian, or indeed, perhaps being even "uncultured." In all likelihood, producers of every modern commodity generate some cultural elements; even broccoli, ostensible a quotidian vegetable, drew a reaction from its producers when then-President Bush admitted that he disliked the vegetable.

In addition, a distinction should be made between producers of a commodity and its consumers and, in some circumstances, in agents in the filiere between producer and consumer. Producer culture may involve not only beliefs about the processes of production but also symbolic meanings. For consumers, although there may be differential interest or curiosity about production processes, the symbolic apparatus may partially overlap that held by producers but may also have distinctive elements. Mothers/housewives, as a result of their belief system, may be concerned to feed broccoli to their husbands and children because it is "healthy."

This view may be shared by broccoli growers who also may have cultural beliefs about the optimal conditions under which the vegetable can be produced. Broccoli harvesters may be totally disinterested in any of this but might think broccoli is a fine crop because they don't have to stoop to harvest it. And the truck drivers who convey the vegetable from its source in the Salinas Valley to consumption in Philadelphia may be completely indifferent to the vegetable they are toting 3,000 miles. At the same time, while broccoli may "sell" itself when displayed on a supermarket shelf, an automobile will generate a lot of culture for those responsible for selling it as well as those that produce and consume it. Each commodity, in other words, has varying degrees of culture and the elucidation of that culture is part of the problem of conducting filiere analysis.

The comparative cultures of some commodities reveals the empirical differences. Wine is an example of a highly cultured commodity; it has a long historical record in many different cultures and societies. Wine's culture is related not only to the wine itself but to the symbolism of grapes in art, architecture, and literature. While wine publications – trade journals, consumer magazines, winemaker publications, coffee table books, how-to books, wine tourism guides, and wine computer programs – can be found in profusion, similar publications are sparse for other

commodity forms derived from the grapevine; table grapes and raisins get scarce cultural recognition. Other agricultural commodities like broccoli, Brussels sprouts, or celery, generate relatively little or no cultural interest.

Wine culture is exceptionally rich. Not only can one find a complex of producer and a plethora of consumer organizations, but also a rich panoply of cultural forms. Considering only the ways in which grapes and their vinous form have appeared in art alone would require encyclopaedic research, and if all the architectural stones chiselled into the shape of grape bunches were collected, it would provide a volume equal to that found in art.

Of the various commodities that have been have researched, wine and tobacco can be said to have developed extensive cultural apparatuses. Grapes are widely found in artistic expressions but I would argue that such grapes clusters are used symbolically to represent, like the cornucopia, the abundance of nature; moreover, grape bunches have great symbolic association with wine.[8]

In contrast, raisin grapes generate little culture. Tomatoes stimulate a small amount of cultural interest – witness the posters showing various tomato forms and the occasional bar of soap smelling of tomato essence and shaped like a tomato and various other tomato forms in art. But iceberg lettuce generates no interest culturally; it "gets no respect."

In cultural manifestations we can see a hierarchy of commodity statuses. It is useful to understand the degree to which commodities generate cultural apparatuses.

CONCLUSION

It was originally suggested that the analysis of commodity systems involved five major areas of consideration: labor process, grower organization, labor, science, and marketing and distribution. The present paper calls for an augmentation of these five to include scale, sectoral organization and state involvement, and culture. Empirical examples have been provided as to the potential utility of these new areas.

That post-factum empirical research has suggested additional areas for consideration in the methodology of commodity chain analysis, also suggests the possibility that additional empirical research will open yet other areas for inclusion. Let me anticipate at least two in addition to the suggestions discussed earlier of Wright and Dixon: the financial organization of a commodity[9] and the length of commodity systems.

Commodity financial organization has been avoided not because it is unimportant

8. While photographs carrying the symbolism of wine invariably show someone holding a wine glass, it would look peculiar if someone were to be holding a bunch of grapes. Similarly, in artistic renderings, the bunch of grapes is found far more frequently than the glass of wine.

9. Henderson (1999) makes the circulation of capital in agriculture a central element of his analysis of California. He deals with capital circulation in agriculture generally rather than focusing on any specific commodity chain.

but because of the difficulties of conducting empirical research. It should be obvious that there are differential financial considerations in different commodities; although all involve financial matters, annual crops require lower levels of investment than trees and vines. A grower can plant tomato or lettuce acreage with much lower investments than grapes or olives since growers of the latter two must wait three and seven years respectively before returns can be realized. Similarly, wine production requires greater capitalization than table grapes or raisins since heavier capital requirements (machinery, storehouses, wine casks, etc.) are necessary and, except in unusual circumstances (for example, beaujolais nouveau and other "nouveau" wines), red wines must be aged thereby tying up capital for long periods of time.

This kind of financial analysis in commodities is possible. What is more difficult is obtaining data on costs in the various segments of production, distribution, and marketing. Some agricultural economists have done relevant analyses. What cannot be found, however, is what the Bank of America or Wells Fargo or other banks have invested in specific commodities and how these investments are broken down either by specific commodity forms or by area/region.

A second area of concern has already begun to emerge: the length and shape of commodity systems. Several critical papers relating to commodity and food systems analyses have suggested the need for amplification of the five areas Friedland originally set out.

Three topics, in particular, will probably need fleshing out in the future. One is the actual process of consumption and how this relates to the production, distribution, and marketing arrangements of the commodity, something in which the contributions of Dixon and Wright will prove useful. Secondly, as FitzSimmons and Goodman (1998), and Goodman (1999) and others have pointed out, most food studies take nature for granted as a "black box" having some relationship to commodity filieres but paying little attention to how commodities interact with nature.

The third is the internal dynamics of the commodity system: in the complex of actors and activities in any commodity chain, who does what and where are the loci of control (the problem that preoccupied Dixon). A recent report on how Costco, the "big-box" retailer, is now handling inventory control, a critical element in retailing, is suggestive. Nelson and Zimmerman (2000) point out that Costco has passed the responsibility of resupply of diapers, a paper product, to their supplier, Kimberley-Clark. Because Costco – and other "big-box" retailers such as Wal-Mart, Target, and J.C. Penney – can track sales of particular products as they are sold, that information can be passed on to suppliers immediately so that shortages in supply can be anticipated. The head of supply chain activity for Proctor & Gamble is quoted as saying: "A shopper buys a roll of Bounty paper towel, and that would trigger someone cutting a tree in Georgia. That's the holy grail." The retailers have, through this process, relieved themselves of yet another responsibility in their drive to cut costs. While this suggests that control has passed from the retailer to the manufacturer-supplier, this is likely far from the case. Future filiere analyses will, in all probability, yield new areas for the further elaboration of commodity systems methodology.

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