

**Report to the Agribusiness Accountability Initiative
Conference on Corporate Power in the Global Food System
High Leigh Conference Centre,
Hertfordshire, United Kingdom**

The Global Food System: A Research Agenda

**The Overview by
William Heffernan, Ph.D. and Mary Hendrickson, Ph.D.
Department of Rural Sociology
University of Missouri
Columbia, MO 65211 USA
Email: hendricksonm@missouri.edu**

With Contributions from:

**Mehmet Arda, Ph.D., Commodities Branch,
Food and Agriculture Organization of the United Nations**

**David Burch, Ph.D., Professor
Griffith University, Australia**

**Roy Rickson, Ph.D., Professor
Griffith University, Australia**

**Bill Vorley, Ph.D., Senior Research Associate,
Sustainable Agriculture and Rural Livelihoods
International Institute for Environment and Development**

**John Wilkinson, Ph.D., Professor
Rio de Janeiro Rural University, Brazil**

1. Introduction

Major transformations are reshaping the global agrifood system. A set of these changes, that has enormous social, political, and economic impacts on farmers, consumers and communities around the world, are loosely referred to by policymakers and agricultural leaders as structural changes.

Increasingly, decisions regarding who produces food, what food is produced, when, where and how that food is produced, and who gets to eat it, are being made in a highly undemocratic manner by those managing a small number of dominant food firms. Public policy decisions that impact the world's food system and often facilitate structural change continue to be made at local, regional, national, and international levels of government even though many of those making the political decisions do not understand the degree to which the structure has already changed. Meanwhile, farmers, consumers, policymakers, communities and even the dominant agrifood firms are trying to cope with the impacts that the increasing consolidation and concentration is having throughout the food system.

A few scholars around the world have been examining the transformations that have happened, or are taking place in various regions of the world. They have also studied what strategies are being developed and implemented to control the food and agriculture supply chain, and who has power to make decisions about food and agriculture. However, to date no comprehensive effort has been made to systematically document these changes or the impact they are having at the global level. This broader understanding is critical if people around the world are to manage the looming issues of poverty, hunger and sustainability.

Even though the changes in the agrifood system have been occurring for over a half century in the U.S., there continues to be a lack of knowledge about agriculture and food, even in

academia. Recently, two professors in the Business Administration College at Arizona State University (Hildred and Pinto 2002) used some of the data we collected at the University of Missouri¹ to critique – in fact ridicule – standard introductory microeconomic courses and texts in use in the U.S. that suggest agriculture is a good example of perfect competition. The authors continued by challenging the emerging academic subdiscipline of “supply chain management” by pointing to outcomes that contradict the contention that supply chain coordination will generally be beneficial to all. They noted that the food sector is a good example of how dominant firms create anticompetitive conditions through supply chain management.

II. Issues Arising as a Result of these Changes

A. The Ethical Dilemma

The lack of knowledge and understanding about the major transformations taking place in how we grow, process, and distribute food is striking, particularly in terms of the larger moral questions arising from this transformation. The major dilemma caused by the restructuring of the food system is the conflict between a government’s perceived need to feed all of its citizens and the chief mission of a corporation – to make a profit.

The role of a government is to protect and enhance the well-being of its citizens. Adequate food for its citizens has to be one of the most important factors in assuring the well-being of its people. But changes are taking place that restrict a government’s capacity to do just this. Although early in their history corporations were seen as extensions of governments, today corporations are chartered to make a profit for those providing the capital. The mission statement of one prominent agrifood firm reads as follows, “Our goal is to increase the wealth of our stockholders.” This is the goal of all corporations and it permeates the activities and

¹ Heffernan, William D., Mary Hendrickson and Robert Gronski. 1999. Consolidation in the Agricultural and Food

decision-making at all levels of such organizations. In the food system, this means that decisions are increasingly being made in the private sector where profit generation is the goal, rather than by nation-states concerned about enhancing the well-being of their citizens.

At the global level, these two very different missions beget an ethical dilemma. The Millennium Development Goals proposed by the United Nations adopted aggressive targets for reducing poverty and hunger by half between 1990 and 2015. In 2000, about 1.2 billion people lived on less than \$1 per day, while 2.8 billion lived on less than \$2 per day.² One International Monetary Fund commentator suggested in late 2003 “the global incidence of poverty is currently over 50 percent and is expected to decline only to about 40 percent by 2015.”³ In fact, the absolute numbers of hungry people have increased since 1995, despite some early gains in addressing hunger.⁴ According to the Food and Agriculture Organization, “852 million people worldwide were undernourished in 2000-2002. This figure includes 815 million in developing countries, 28 million in the countries in transition and 9 million in the industrialized countries.”⁵ Will societies across the globe be able to solve issues of poverty and hunger within for-profit food systems?

B. Impacts on Research and Technology

This change from decision-making by governments to decision-making by for-profit firms in the global food system has special implications for making food available to those with low incomes. Food firms concentrating on increasing income to stockholders will not be

System. Report to National Farmers' Union. February.

² Phillips, Michael M. 2000. “World Bank Rethinks Strategy for Poor --- Political Change Is Necessary, Not Economic Growth Alone, a Study Suggests.” *Wall Street Journal*. September 13. pg. A.2

³ Loungani, Prakash. 2003. “The Global War on Poverty: Who's Winning?” *Finance & Development*. Vol 40(4):38.

⁴ World's hungry grew by 18 million in last 5 years, group says Knight Ridder Tribune Business News. Washington: [Dec 10, 2004](#). pg. 1

⁵ FAO. 2004. State of Food Insecurity in the World. (Accessed on June 7, 2005 at http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/007/y5650e/y5650e00.htm)

interested in focusing their efforts on the half of the world's population that earns less than \$730 per year when they can center their attention on affluent consumers with thousands of dollars to spend annually. Most of those in the scientific and corporate communities promise an end to hunger with the application of new technologies to food production. Unfortunately, the very technology selected for development is influenced by profitability. The dream of many scientists doing basic research, research that usually requires a huge input of private and public capital, is that their efforts will someday help feed the hungry people in the world. If present structural arrangements continue their current trends, this dream of scientists will remain just that – a dream.

Research, especially research that is very expensive, is usually divided into two stages. The first is basic research. This is where most of the public research funds are spent because there is often little economic incentive to attract private funding. The second stage is developmental research or commercialization research. The “for profit firms” look over the results of the basic research and ask which ones have profitable application. They then spend additional funds, often equaling that spent on the basic research, to bring a product to the market. They have no motivation to fund research that holds little possibility for profits, such as research on relatively minor crops, crops grown in limited geographic areas, or crops utilized by poor people. Neither are they motivated to develop knowledge that could lead to reducing the use of expensive inputs by farmers.

C. Beyond Individual Corporations

It would be easy to vilify the dominant agrifood firms, but the issue is a societal one and must be addressed as such. We are all part of it. The economy of the world is increasingly tied to stock markets around the world. We who have retirement pensions and investments in the

U.S. tied to the stock market have been very disappointed with the return on our investments over the past couple of years. Chief executive officers are hired and fired based on the financial performance of their firm. How then can we expect the corporations to feed those who cannot afford to buy their food in the market? What kind of a private/public effort will it take to feed the hungry of the world? Without some new or new combination of current structures, access to safe, nutritious and adequate food will increasingly become a privilege for the affluent of the world and not the fundamental right of all to be free from hunger as the Rome Declaration of World Food Security affirms.⁶

D. Are Farmers of the North Needed?

Steven Blank, an economist from the University of California-Davis, has inadvertently described how the evolving global food system essentially makes food a privilege rather than a right.⁷ In his book “The End of Agriculture in the American Portfolio,” Blank suggested that consumers in the U.S. can buy their food from poorer countries more cheaply than it can be produced in the U.S. For years, farmers in the U.S. have been told that they are the most efficient farmers in the world. Blank bypasses the many issues surrounding the concept of efficiency as it relates to U.S farmers and argues that U.S. farmers are some of the highest cost producers in the world. (The same could be said for farmers in many other countries of the North.) Thus, he proposes consumers in the U.S. buy food from poorer countries so that land in the U.S. could be used for such higher value purposes as urban expansion and recreation. This further underscores the point that in the global food system it matters little where the food is produced. Consumption of food will depend upon one’s income.

⁶ United Nations Food and Agriculture Organization, Rome Declaration on world Food Security, November 1996, available at <http://www.fao.org/docrep/003/w3613e/w3613e00.htm>, accessed May 2, 2005.

⁷ Blank, Steven. 1998. The End of Agriculture in the American Portfolio. Quorum Books, Westport, Connecticut.

One only needs to look at the U.S. agrifood export and import data for the last twenty years to realize that U.S. and global food policies are taking us in the direction Blank suggests. Agrifood exports from the U.S. during the past couple of decades have been fairly constant while imports have continued to increase. In fiscal year 2003 U.S. agriculture exports jumped five percent to \$56 billion, but imports increased by ten percent to almost \$46 billion. The export surplus was about \$10 billion, a 20 percent decrease from 2002. In the fall of 2004, the U.S. Department of Agriculture predicted that the value of U.S. agrifood exports would about equal the imports. Some are already predicting that imports will exceed exports within the next two years.

Because the U.S. is the number one consumer nation, no one is suggesting that consumers in the U.S. will not have access to food in the foreseeable future. As Blank says, the American consumer can buy food from poorer countries. Left out in Blank's analysis is the fact this usually requires poorer nations to convert some of their land now used for domestic production into producing for the global market. If poor countries are going to participate in the global food system, it may be as producers rather than as consumers.

We find ourselves agreeing with Blank that in the U.S. that the vast majority of consumers do not **need** production from farmland in the U.S. We would argue that it is the poorer consumers of the world, especially those in the poorer nations, that **need food** production from farms of the North, given that the most extensive areas of highly productive agricultural land lie in North America and Europe. Using World Bank figures, Wiebe⁸ calculates that 29 percent of land in the developed countries, and over 50 percent of cropland in Eastern Europe is classified in the top three land-quality classes compared with 6 percent in Sub-Saharan Africa,

16 percent in Asia, and 19 percent in the Middle East. Although we would agree that the distribution of food and not the production of food is the major issue today, the world cannot afford to forgo too much of the world's prime farm land.

Certainly, we are not trying to defend the current agrifood programs in the U.S. and other major exporting countries. However, we would argue that care must be taken not to let some of the most productive agricultural lands in the world be permanently shifted into non-farm uses even if the populations of such countries are able to purchase food more cheaply from poorer countries. In a mature capitalistic economic system characterized by monopoly-like structures and controlled markets, a critical question becomes how do we assure that highly productive land will be utilized for food production?

E. The Loss of Self-Sufficient Agriculture

The problems of the poor will become even more disastrous because over two-thirds of those earning two dollars a day or less live in rural areas and are involved in a largely self-sufficient agricultural system. Food is often produced by extended families on small plots and consumed by a family network that frequently includes all members of the village. Because of the norms surrounding the meaning and use of the food and the barter exchange system, food is not sold through a market economy requiring money. In this system having a small daily income does not necessarily mean such families do not have access to food because food is perceived as a right provided through community networks.

In contrast, farmers and their villages drawn into the market economy are faced with a new system of acquiring food that requires cash. Furthermore, the emerging food system with global retail stores as the major driver of change requires greater uniformity of product and

⁸ Wiebe, 2003.

predictability of arrival time that forces restructuring of the agrifood system back through the whole production and distribution system, including peasant farmers. History suggests that the small subsistence farmer will not be able to meet the requirements of the new agrifood system structure, and thus will be forced into the money economy to obtain food as their urban counterparts already do. Forcing the rural poor into a money economy for food will further underscore the fact that food is a privilege for those with cash while those without it face hunger.

F. Is Food So Unique It Requires Special Policies?

A growing base of research indicates that the food system is becoming more like other economic sectors of the economy. Is this desirable, or even ethical, given that food and water are different from all other goods and services exchanged in the global economy because they are necessities and are needed on a regular basis? Duane Andreas, former CEO of the agrifood giant Archer Daniels Midland, said “The food business is far and away the most important business in the world. Everything else is a luxury. Food is what you need to sustain life every day. Food is fuel. You can’t run a tractor without fuel, and you can’t run a human being without it either. Food is the absolute beginning.”⁹

The World Trade Organization has inadvertently stumbled into this issue. Has that organization yet begun to understand that food is different from other goods and services that are exchanged in the global system? As delegates from nations around the world gathered in Seattle (1999) and Cancun (2003), food policies (under the guise of agricultural negotiations) were the focus of major disharmony. Some argue the future of WTO may be at stake if it fails to address the food issue as a special exception requiring unique policies.

G. International Trade vs. Intra-organizational Transfer

Most of the international trade and policy debate still focuses on countries as the major unit of analysis, assuming national governments are the major decision-makers even as the dominant agrifood transnational corporations (TNCs) take a larger and larger role in global food decision-making. Much of what passes as international decisions in the political realm are nothing more than intra-organizational decisions for TNCs. In an effort to process and distribute their products, agrifood TNCs transfer their products from one location to another, sometimes crossing national borders. These **intra-firm** transfers become **international** acts and are called **international** trade. Regulations and standards in the food system that used to be the domain of governments are being usurped by TNCs through this process, not necessarily deliberately, but because of the global scope of their activities.

H. The Global Food System Is Still Very Dynamic

Everyone attending this conference could add to this list of reasons why it is important to focus attention now on the changing structure of the food systems around the world. One of the reasons for the urgency of this conference is that the food system is still evolving. It is anything but a mature economic system. The direction of this change can still be altered. There are dozens of other ways to structure a global world. Many economists defending the changes that are occurring in the system argue that current changes taking place are inevitable. They suggest that the highly concentrated, industrialized system is just the way the economic system is meant to be. In fact, this system is evolving because of the vision and behavior of a small minority of the world's population (and their organizations) and it can be changed by humans with a different vision. The sooner changes are made the easier it will be to alter the path of history.

⁹ Reuters, 1/25/99

III. Summary Report From the Developing Research Network

In January 2005, thanks to the Agribusiness Accountability Initiative (AAI) and Oxfam America, some of us who had explored aspects of concentration in the food system from our own region of the world met in Paris. We participated in the International Workshop on Concentration in the Food and Agriculture System. The purpose was to share our own respective findings with other researchers in an effort to better understand and describe changes at the global level. The only academic network that tied some of the researchers together was the Sociology of Agriculture and Food Research Committee of the International Sociological Society. With only three months notice and no available research funds, researchers were asked to simply bring a brief report based on their past research.

Many of you have probably at least scanned some of those regional reports. If so you will note the reports lack uniformity in how the data were collected, how concentration was measured and what sectors or stages of the food system served as the focus. It is clear that the research was not guided by a common purpose. Still the effort provided some useful information relative to the global concentration of the food system. We want to briefly summarize the set of data, which at least suggest a hypothesis.

A. Europe

Europe is probably the best example of how a few firms have emerged to dominate the retail stage of the food system. Europe is very diverse. The 25 member states of the European Union (EU) have distinct differences; thus, the question is whether data from Europe as a whole or data from each member state should be utilized in such analysis. At this point in time, most of the research to date on retail concentration in the food sector has focused on the 15 oldest EU member states. In Germany, the largest four grocery firms (Metro Group, Rewe Group,

Edeka/AVA Group and Aldi Group) have 56% of the total market. In France the concentration of the largest firms (Carrefour, ITM, Leclerc, and Casino) is 63%. The largest grocery firms in The Netherlands (Ahold, Casino, Sparwer, and Makro/Metro) have a CR4 of 66%. In Spain the CR4 is 62% (ElCorte Ingles, Carrefour, Mercadona, and Eroski), in Italy the CR4 is 36% (Coop Italia, Auchan/Rinascente, Carrefour and Conrad), and in Belgium the CR4 is 64% (Carrefour, Delhaize LE Lion, Colruyt and Cora Delhaize). In Denmark, Norway, Sweden, and Finland the largest three retailers in the country have between 78% and 95% of the total market share. Taken together, the largest four grocery retailers in Europe are Carrefour, Metro Group, Tesco, and Rewe.

When moving upstream in the food supply chain to the different stages supplying the retailers, the CR4s are not nearly as high. The largest four food manufactures are Nestle and Unilever, the two largest in the world, followed by Diageo and Danone. In the EU, the CR4 for pig slaughterhouses is 24% and the largest pig producer is Smithfield, which produces about 5% of Poland's pigs. The top 10 integrated broiler producers account for about 36% of the broiler production.

B. U.S. and Canada

In the U.S., there was considerable concentration in processing of some commodities (horizontal integration) such as grain, beef and pork processing in the early part of the twentieth century. By the middle of the century in the poultry sector, vertical integration that combines different stages (feed processing, production and processing the birds) of the production process was introduced. Today the CR4 ranges from 50% to 83% for the processing of most agricultural commodities. The CR4s are even higher in the farm input sector (seed, chemical, fertilizer and farm equipment). Because about half of the firms providing the majority of the farm inputs at

the global level – and firms processing perhaps more than half of the global grain, oilseed crops and animal production – are now based in U.S., the global CR4 probably looks very much like that of the U.S. and Canada. Unlike Europe, the supply chain became concentrated before the retail stage in U.S.. The CR5 level for the retail sector did not exceed 24% until the late 1990s. Today, the CR5 is 46% with Wal-Mart and Ahold (the Netherlands) as the TNCs in the top five.

The vertical integration that attracted attention 50 years ago in the poultry sector is now obvious in much of the food system. Increasingly, the same firms are involved in all stages of the food system through ownership, or through the development of a variety of strategic alliances with other firms to maintain control of the product from gene to the retail shelf. These food system clusters are composed of a very complex network of relationships, but usually only three to four firms emerge as dominant firms in each cluster.

C. Brazil

Transnational food firms with their foreign investment capital have had a major presence in Brazil since the beginning of the 20th century. Firms like Unilever, Dreyfus, Bunge and Nestle arrived before mid-century and today a number of the major agrifood TNCs are active in the country. As in the U.S. a listing of the dominant firms in the Brazilian agrifood sector closely resembles a global list of such firms. In 2003 the largest four agrifood firms were Bunge, Cargill, Sadia (Brazilian), and Nestle.

The CR4 (Bayer, Syngenta, Uniroyal and BASF) for fungicides and insecticides is over 90%. Monsanto accounts for over 90% of the transgenic market and Cargill and Bunge dominate the fertilizer market and tie the sale of the fertilizer to the purchasing of the crop. This is a good example of the growing trend in which farmers have to purchase their inputs from the same firms to which they must sell the products.

The CR4 for soybean processing is 57% (Bunge, Cargill, Coinbra-Dreyfus and ADM) and the CR3 for soy oil refining is 68% (Bunge, Cargill, and ADM). In the meat sectors, the largest processing firms are Brazilian firms with a CR4 of 32%, but for the more highly manufactured meats the CR4 is 70% (Sadia, Perdigao, Doux (Frangosul) and Cargill (Seara). TNCs such as Nestle, Unilever, Kraft, Pepsi and Coca Cola dominate much of the food manufacturing stage. The Brazilian firm that was recently purchased by Interbrew, based in Belgium, controls most of Brazil's beer market and 40% of the Latin America beer market.

During the 1990's, Brazil experienced major changes in the retail stage that led to a CR4 of 36%. It is noteworthy that no domestic firm remained as a sole owner of one of the largest four firms. Pao-de-Acucer, a 50-50 partnership between a Brazilian firm and the French firm Casino, is the largest retail firm. Carrefour (France), WalMart (U.S.) and Sonae (Portuguese) round out the largest four firms. Many of the agrifood TNCs have located their Latin American headquarters in Brazil and are expanding their reach beyond Brazil into the rest of Latin America.

D. Australia

Given its geographic isolation and its internally disperse population, Australia has never been able to support more than a few firms in any stage or sector, and the economy has always been highly dependent on export markets. Today, dominant agrifood firms are some of the largest in the world including Cargill, Nestle, Kraft (Altria), Unilever, ConAgra, Diageo and General Mills. There are seven major beef producers and six major processors in the country (ConAgra, Nippon Meat packers, Cargill, Teys Brothers, Consolidated Meat group and Bindaree Beef). There are five major dairy processors, while the grain trade is dominated by Cargill and ConAgra.

In the vegetable sector, McCain (Canada), Simplot (U.S.) and Heinz (U.S.) are the major firms. Coles and Woolworths have 78 % of the retail grocery sales in the country with increased competition coming from other firms such as Aldi from Germany, and Tesco and Sainsbury from the United Kingdom. The major fast food outlets are McDonalds, Hungry Jack and KFC.

E. Asia

Like Australia, many countries in Asia have a long history of producing for the global market. But within some countries new horizontally and vertically integrated agribusiness firms have emerged to challenge some of the largest Western agrifood firms. Beginning as Chia Tai Seeds and Agricultural Company in 1921, the Charoen Pokphand (CP) Group emerged as Thailand's largest agribusiness firm. It began selling seeds, fertilizer and insecticides before adding feed mills and livestock production to its operations. By 1993, it was the world's largest prawn producer, second largest poultry producer and third largest producer of animal feed. The CP Group eventually added food retail supermarkets and hypermarkets, and other franchise outlets in Thailand, including KFC. Eventually it became the third largest operator of 7-Eleven stores in the world. The firm developed operations in many other countries including Turkey, Indonesia, Malaysia, the U.S., India, Vietnam and Bangladesh. In 1995 the CP Group was the largest single foreign investor in China. The Asian economic crisis of 1997 dealt the CP Group a major blow, but today they are coming back strong.

There are at least three similar agri/food firms in other Asian countries that are family firms with strong ties to the national governments and similar achievements. As the authors note in some of their other research reports, these firms have developed their supply systems to support the retail outlets in peasant societies.

F. Africa

Supermarkets are increasing at least in some eastern and northern portions of Africa. The major firms involved in developing supermarkets are based in South Africa and Kenya. Pick'n and Pay and Shoprite, both originating in South Africa, are the two largest retail firms and have 80% of supermarket sales in South Africa. (In South Africa the supermarket sector holds about a 55% share of the food retail market.) Pick'n Pay, Shoprite, Metro Cash and Carry and Woolworth, all from South Africa, have been expanding into nine neighboring countries. In these countries, as well as five countries further away, they have been competing against some other international firms that had arrived before them. However, by using their experience and knowledge of the local culture as well as their procurement networks from their home country, they have been quite successful. Although some of the European retail firms such as Carrefour (France), Casino (France), Metro (Germany), and Auchan (France) are dominant in countries such as Egypt, Morocco, Tunisia, Cote d'Ivoire and Nigeria, they have shown little interest in challenging the African firms in other parts of the continent.

Less is known about the total distribution system serving the retail sector in Africa, but it appears that the retail firms are still relying heavily on distribution from their homeland. There is some question concerning how much more they can expand without developing new supply chains. At this point in time, it appears that this restructuring has not had much impact on the host countries. On the one hand, that may be judged to be positive because it has not led to social and economic disruptions in rural areas. From a developmental perspective, however, it may hold little hope for economic improvement for local farmers.

III. Summary

Despite the interesting data presented above, at this point in the research process it is very dangerous to draw any conclusions. We are haunted by the nagging question of whether the similarities or differences noted are the result of real differences or inadequate data.

First, the food system in much of the world is very dynamic, but the rapid changes do not follow any single pattern. However, there is a trend toward increased concentration of ownership and control in the food system. In each report there is evidence of concentration occurring in some stage of the food system. The timing of when concentration evolved differs, as well as how that evolution came to be. In Africa, the information suggests the process is just getting underway and it is being led by the retail stage. Australia has never had the population base to support a large number of firms in each sector, and, because of their colonial history, they have always been involved in the world market with foreign firms operating in the country. Brazil, like Australia, has long been tied to the world market through foreign firms. In Europe, it is clear the major change has come in the concentration of the retail sector. In fact, two of these European based retail firms compose two of the three largest global retail firms. In the U.S., horizontal and vertical integration started farther up the food chain through the production and processing sectors. In the past ten years, the retail stage has become much more concentrated and there is general agreement among most scholars that the retail firms will increasingly become the major driver for change in the entire food system.

Second, much of the attention in these reports is on horizontal integration, but there is information, especially from Asia and the U.S. that documents the occurrence of vertical integration. In Asia, the large, vertically-integrated firms own and control all stages of the agrifood supply chain from the handling of farm inputs through the retail store. In the U.S., we

have also documented the development of vertical integration. In some cases it has involved a single firm gaining ownership and control of more than one stage of the food supply chain, but no U.S. firm has acquired ownership of the entire food chain.

In the U.S., firms have acquired one or more stages of the chain, and then utilized strategic alliances with other firms involved in additional stages in an effort to exert control over the production, processing and distribution of food from the gene to the retail outlet. Vertical integration, described by economists as the simple combining of two or more stages or links in a sector, is no longer adequate to describe the complexity of the emerging structure. This evolving structure is extremely difficult to understand. It is not just a host of firms and their independent interactions acting in a competitive market place, but rather the development of complex alliances among firms that is sometimes competitive and sometimes cooperative, and which encompasses the entire global food system.

Global firms like Cargill and Monsanto linked together through a strategic alliance will probably take that joint venture to other countries where both firms operate such as in Brazil. We would even anticipate that Wal-Mart will probably try to maintain the strategic alliance they have with Tyson and Smithfield in the U.S. as they become involved in restructuring the pork sector in Brazil.

The data we have collected allow us to hypothesize that vertical and horizontal integration will continue to increase among the agrifood TNCs, and that the interrelationships between and among these firms will become more complex. Furthermore, the power to make decisions about food will be further displaced away from the farm or household level and located in the hands of transnational actors.

We will end our hypothesizing at that point. However, there are a number of additional questions that come to mind in examining these data. Does culture and policy play a role in the restructuring? Will different products, e.g. fresh fruits and vegetables, fish and meat, produce different rhythms and models of restructuring? Could Asian food system clusters evolve in Africa and organize the peasant-based agriculture that exists there? Is there a place for cooperatives in the global food system? What national or international agency will track the changes happening in the food system in order for policymakers to make more informed decisions? What will be the role of national governments and their relationships to truly transnational firms? Will these relationships be different than if firms are national or multinational?

In short, it will take cooperation between those inside and outside of academia to systematically describe and analyze the evolving system in order to understand its implications for farmers, consumers, communities and governments across the globe.