

The Global Poultry Agro/Food Complex

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The globalization of the food system is a topic of growing concern as various nation/states try to obtain food security. This analysis tests the hypothesis of the existence of a poultry agro/food complex being constructed by transnational corporations. We focus on the concept of "global sourcing" and argue that the rise in economic power of transnational corporations limits the abilities of individual nation/states to direct their agricultural policies toward national ends. We also argue that with the increasing transnational character of the large corporations the usefulness of individual nation/states or individual commodities as units of analysis decreases. We conclude that U.S., European, and Japanese transnational corporations are indeed creating a global poultry agro/food complex based on the concept of "global sourcing". Our findings also suggest that these same transnational corporations are very active in several other commodity sectors.

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Introduction:

This analysis is another step in a continuing project which tracks the rationalization of the global food system. First we tracked the U.S. poultry industry as it was transformed from a system of many independent producers into a totally integrated industrial style production system (Heffernan, 1972; 1984). Next we traced the integration of the rest of the U.S. commodity sectors and found a structural oligopoly where a few firms had dominant market positions across many commodity sectors (Heffernan, 1989; Constance and Heffernan, 1989; Constance et al., 1990). Now we turn our focus to a portion of the global food system (Heffernan, 1990)^(*).

This analysis investigates the existence of a poultry meat agro/food complex based on the concept of global sourcing by transnational corporations (TNCs). Drawing upon the work of Aglietta (1979), Friedmann and McMichael (1989) argue that different "food regimes" requiring different international divisions of labor link different historical periods of capitalist accumulation with international relations of food production and consumption.

Friedmann and McMichael use Sanderson's (1985; 1986) concepts of the growing

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internationalization of capital and global sourcing to describe the emerging "food regime". The new food regime leads to a restructuring of agricultures in most countries as TNCs increasing rely on global sourcing. Global sourcing refers to the opportunity to obtain the same commodity from different parts of the world. By sourcing globally the TNCs diversify the countries from which they obtain inputs, thereby reducing uncertainty related to commodity procurement. In addition to reducing uncertainty, TNCs can also play one country or region against another. This undercuts the opportunities countries have to direct their agricultural policy toward "national ends" (Friedmann and McMichael, 1989:95).

We start with Friedmann and McMichael's (1989) description of the global meat agro/food complex created by U.S. TNCs. Focusing on the poultry industry, we hypothesize that we can document significant U.S. TNC activities, and the activities of other TNCs, in countries where comparative advantage dictates. By focusing on the major U.S. TNCs' formations of feed and poultry industries globally, we should also be able to determine whether or not a global poultry agro/food complex is beginning to evolve.

Our task is to identify the global locations which have comparative advantage for poultry production as well as poultry consumption, i.e. the best global poultry production sites and markets. Then we need to document the major poultry and feed TNCs' international activities in creating or maintaining feed and/or poultry operations, both for domestic/local production and consumption and for export. If our hypothesis is correct it logically follows that the major poultry TNCs' activities will be in countries that have comparative advantages for poultry production and consumption.

We choose to concentrate on the poultry⁽²⁾ industry because it was the first animal production industry to be rationalized and transformed from

agricultural production into industrial production. Poultry production technologies are also easily transferable to most of the globe. We think that poultry meat production, as it represents one of the cheapest forms of meat protein production, is a logical starting point to investigate the global integration and rationalization of the larger feed grains/protein sources complex (Heffernan, 1990).

By focusing on the poultry industry we utilize the "commodity analysis" approach pioneered by Freidland et al. (1981). However, we expand this form of analysis based on the unique production characteristics of particular commodities to what we call "cross commodity conglomerate analysis" to facilitate a better conception of the big picture⁽³⁾. Our method has shown that using commodities as units of analysis is too limiting. Often the same firm has dominant market positions across many commodity sectors (Heffernan and Constance, forthcoming), often in more than one country (Heffernan, 1989; 1990). For these reasons we have shifted our units of analysis from commodities and countries to individual firms within an increasingly global market. Many of the firms are TNCs. This paper covers TNC activities in poultry and poultry feed production from January of 1987 to June of 1990.

Two sets of data are utilized. First, the major poultry producing countries with their respective comparative advantages are determined. Also the major consuming countries are established. We rely heavily on the work of Bishop et al. (1990) to inform this investigation. Second, the global activities of the major poultry trading companies, including their feed industry activities, are documented. Feed industries are included because they "anchor" livestock production operations, i.e. they are the first step in the process of rationalization and integration. We limit our discussion to the activities of three major U.S. companies, one major EC company,

and five major Japanese companies. These firms accounted for the vast majority of global activities in poultry and feed operations.

Data Section A: Major Poultry Producers and Consumers

We begin by summarizing data on the major poultry producing and consuming countries. Next we discuss comparative advantage of various producing countries focusing on the the global production locations which provide the cheapest labor, ample supplies of affordable feed, limited government restrictions, and low environmental pollution problems. Also, we examine the global sites where consumption is high and expanding which will indicate where global sourcing for domestic consumption should be located.

Major Poultry Producing and Exporting Countries:

The production of poultry, and the feed industry which supports it, can be divided into four categories (Table 1): 1) Domestic production for domestic consumption, 2) Domestic production for international consumption-exports, 3) International production for domestic consumption, and 4) International production for international consumption-exports.

Quadrant 1 in Table 1 shows in rank order the world poultry meat producers as of 1989. The U.S. is the largest global poultry producer, followed by the USSR, China, the EC⁽⁴⁾, Brazil, Japan, Thailand and Hungary. Most production is consumed domestically. Only the USSR and Japan are not exporters. (see also Tables 2 and 4 in Appendix).

In Quadrant 2 the exporting nations are listed in order of ranking, with the importing countries/ areas listed in rank order after the exporting country. Notice that the EC is the largest exporter followed by the U.S., Hungary, Brazil, Thailand

and China (see also Tables 4 and 5 in the Appendix).

Quadrant 3 lists countries in which the U.S, EC, and Japanese TNCs are producing poultry, or feed, for domestic/local consumption outside their home countries, e.g. U.S. based firms with operations in Brazil producing primarily for consumption in Brazil. These activities indicate global sourcing for domestic/local markets versus export markets, i.e. businesses set up to take advantage of growing domestic/local consumption.

Quadrant 3 is divided into poultry and feed production. The data shows U.S. firms produce poultry for domestic/local consumption in nine countries. The U.S. firms also have one joint venture in the USSR designed to increase feed conversion in poultry operations. The U.S. firms listed have feed operations in thirteen countries. The EC firm has no global poultry industries that we could find but does have feed industries established in at least fifteen countries plus some in Africa and the Middle East. Japanese firms produce poultry meat for domestic/local consumption in four foreign countries.

Quadrant 4 lists the countries which produce internationally for export, e.g. an ECTNC setting up operations in Brazil to export to Japan. These are the locations that should correspond to the concept of global sourcing for export production. U.S. firms produce poultry in Thailand and Mexico that is specifically targeted for exports. Japanese firms have operations in Brazil, Thailand, Mexico, and Malaysia targeted for Japanese markets.

Major Poultry Consuming and Importing Countries:

Poultry consumption is highest in the U.S., followed by the USSR, Japan, and Brazil (see Table 6 in Appendix). Table 7 shows that Japan

Table 1: Summary of Major Poultry Trading Countries' Activities

CONSUMER COUNTRIES

		Domestic	International
		(in rank order)	(in rank order)
P r o d u c e r	Domestic	US USSR* China EC Brazil Japan* Thailand Hungary	EC—Middle East, Africa, Far East, Caribbean US—Far East, Caribbean, Africa, Middle East Hungary—USSR, Eastern Europe, EC Brazil—Middle East, Far East, Africa, EC Thailand—Far East China—Far East
	International	1 3	2 4
C o n t r i b u t i o n s		US—Brazil, Argentina, Mexico Spain, Portugal, Puerto Rico England, Canada, Thailand, Malaysia (f), Thailand (f), Taiwan (f), Phillipines(f), South Korea (f), Japan (f), Spain (f), Portugal (f), Puerto Rico (f), England (f), Canada (f), China (f), USSR (f), Mexico (f)	US—Thailand, Mexico Japan—Brazil, Thailand, Mexico, Malaysia
	* USRR & Japan are not exporters	EC—USSR (f), Hungary (f), China (f), Italy (f) Yugoslavia (f), Poland (f), France (f), The Netherlands (f), Portugal (f), Puerto Rico (f), Trinidad (f), Japan (f), Taiwan (f), South Korea (f), Africa (f), Middle East (f)	
	(f) = Feed industry	Japan — Brazil, Thailand, Mexico Malaysia	

is the leading poultry meat importer, followed by West Germany and the USSR (see Tables 3, 4 and 5 in the Appendix).

Consumption has increased the most in Hong Kong, followed by Thailand, the U.S., Saudi Arabia, Hungary, Japan, West Germany, the

USSR, The Netherlands, and France. The expanding markets are in the Far East, the Middle East, the EC, Brazil, the USSR, and North America. The fastest growing markets are in the Far East, especially Hong Kong and Japan (Tables 6, 7 and 8).

Table 7: Importing Countries with Rank Order of Supplier Countries - 1987

Japan—US, Thailand, Brazil, EC
 West Germany—EC
 USSR—Hungary, EC, US
 Hong Kong—US, EC, Brazil, Thailand
 Saudi Arabia—EC, Brazil, Hungary, US
 Gulf States—EC, Brazil
 Sub-Saharan Africa—EC, Brazil
 Egypt & Iraq—Brazil, US

Source: Compiled from Table 5.

TABLE 8: Importing Countries — Changes in Domestic Production and Imports - 1985-1989

Country	Change in Production (percent)	Change in Imports (percent)
Japan	+ 7	+ 183
West Germany	+ 15	+ 18
Saudi Arabia	+ 40	Decline
USSR	+ 17	+ 15
Hong Kong	+ 0	+ 48

Source: Compiled from tables 2 and 4.

Comparative Advantages of Major Poultry Trading Countries:

Table 9 provides a summary of the major exporting countries' comparative advantages. The U.S. and the EC both have relatively high labor costs. Both also have high government subsidies to facilitate exports. The U.S. has some advantage in feed costs and availability but the EC has some advantage in processing technologies and inspection requirements (Broiler Industry, 1987:98-100; Amey, 1989:42). Both producers

have medium or high environmental costs.

Brazil and Thailand are characterized by low labor costs, adequate feed supplies, low government subsidies, and low environmental costs. China has low labor costs but an inefficient feed industry, medium levels of government subsidies, and low environmental costs. Hungary has medium priced labor, poor to adequate feed supplies, and medium levels of government subsidies.

TABLE 9: Major Exporting Countries Comparative Advantages

Environ- Country	Labor	Feed	Government	
	Costs	Availability	Subsidies	ment
United States	Hi	+	Hi	Med
EC:				
France	Med-Hi	=*	Hi	Med
Netherlands	Hi	-*	Hi	Hi
Brazil	Low	+	Low	Low
Thailand	Low	+	Low	Low
China	Low	-**	Med	Low
Hungary	Med-Low	=	Med	N/A

N/A = Not available.
 * = Dependent on soybean imports
 ** = Inefficient feed technology
 (+) = Ample feed availability
 (=) = Some imports required
 (-) = Dependent on imports or low feed quality

Source: Bishop et al., 1990; van de Ven, 1987.

Summary of Data Section A:

Table 1 quadrant 3 shows us that the U.S. firms have an extensive global presence in the poultry and feed industries, especially where poultry demand is relatively high and/or increasing, i.e. the Far East and Europe. The major EC firm we tracked has no determinable global poultry operations but has extensive global feed operations, also located in areas where poultry consumption is high and/or increasing.

Both the U.S. and the EC firms have several new operations, mostly in the forms of joint ventures in feed in the socialist countries. Japan has firms with operations in Brazil, Thailand, Mexico, and Malaysia for both domestic and export production. Table 1 quadrant 4 shows that there are six examples of international firms producing for export markets, two of these are U.S. operations and four are Japanese. These operations are located in Thailand, Brazil, Malaysia, and Mexico.

These findings correspond with the summary of comparative advantages in Table 8 showing that the best global production sites are Brazil and Thailand. Combined these tables seem to paint a picture of TNC investment targeted for export production in countries with low labor costs and high feed availability, combined with low government intervention and low environmental costs, i.e. countries like Brazil and Thailand. Significant TNC activities targeted for domestic/local consumption were also found, especially in high consumption and growth markets like the Far East, Brazil, and the socialist countries. Now let's look at some of the individual TNCs and their international activities.

Data Section B: Activities of Major Poultry Trading TNCs

Our analysis of the data indicates four major firms have emerged. These four firms, plus the

five Japanese firms, represent the vast majority of TNC activities in poultry and feed. They are Tyson Foods, Inc., the largest broiler and hog producer in the United States (Tyson, 1990) and ConAgra, Inc., the largest U.S. turkey and second largest broiler producer and processor with dominant market shares in several other commodities (ConAgra, 1990; Heffernan, 1989; Heffernan and Constance, forthcoming). The third firm is Cargill, Inc., the largest grain trading firm in the world and the largest privately held corporation in the U.S. with leading market shares across many commodities (Cargill, 1990; Heffernan and Constance, 1990).

The fourth firm is Ferruzzi of Italy, one of Europe's largest agricultural and chemical firms. It is the third largest feed dealer in Europe and European leader in sugar, rice, and oils (Ferruzzi, 1990). Ferruzzi is one of the top soybean processors in the world and its subsidiary, Central Soya, is the second largest feed dealer in the U.S. (Feedstuffs, 1988:1). Ferruzzi was by far the most active European firm.

In this section we summarize the activities of these four TNCs, plus a few activities of five Japanese firms. Table 10 shows the equivalent of Table 1 quadrant 3 but provides the TNC's name. It is divided into poultry and feed sections.

Poultry:

Tyson Foods has two global operations (Canada and Mexico) targeted for at least some domestic consumption. In 1988 Tyson bought controlling interest in Agrimont, Inc. of Canada, an integrated poultry company operating six processing plants in Canada (Broiler Industry, 1988:10). Tyson also has a joint venture in Mexico to produce and process broilers there (Tuten and Amey, 1989).

ConAgra has three international poultry operations producing for local consumption (Spain, Portugal, and Puerto Rico). ConAgra Europe owns Bioter, S.A. and Saprogal, S.A. in Spain and in Portugal it has majority interest in Sopropor, S.A.R.I. (ConAgra, 1990). ConAgra also has a joint venture with the USSR to work on

**TABLE 10: Summary of Major Trading Firms Activities by Country
(J/V = joint venture)**

POULTRY

Tyson—Mexico, Canada
 ConAgra—Puerto Rico, Portugal, Spain, J/V Soviet Union
 Cargill—Argentina, Brazil, England, Thailand
 Mitsui and Co.—Malaysia
 C.Itoh—Mexico
 Mitsubishi—Brazil, Brazil
 Ajinomoto—Brazil
 Nippon Meat Packers—Thailand

FEED

Tyson—Japan, Canada
 ConAgra—Portugal, Spain, J/V Soviet Union
 Cargill—Canada, Brazil, Japan, Spain, Malaysia, Taiwan,
 South Korea, Thailand, Philippines, J/V China
 Ferruzzi/Central Soya—France, The Netherlands, Taiwan,
 Portugal, Puerto Rico, Thailand, J/V Yugoslavia,
 J/V USSR, J/V Hungary, J/V Poland, J/V China

poultry productivity (Feedstuffs, 1990a:5).

Cargill has poultry industries in Argentina, Brazil, Thailand, and England which are at least partially targeted for domestic markets. Cargill Agricola has operated in Brazil since 1948 (Feedstuffs, 1989a:8). In 1989 Cargill started large scale intensive operations in Argentina (Broiler Industry, 1989b:14).

We found no global poultry operations for Ferruzzi. Several Japanese firms have recently invested in and/or formed poultry operations around the world which include production for local consumption as well as exports back to Japan. These include Mitsui and Co. in Malaysia, C. Itoh in Mexico, Mitsubishi and Ajinomoto in Brazil, and Nippon Meat Packers in Thailand.

Feed:

Tyson has three feed operations outside the U.S. located in Canada, Mexico and Japan. ConAgra has feed operations in Spain, Portugal, and Puerto Rico and a joint venture in poultry feed manufacturing in the USSR (Feedstuffs, 1990a:5). Cargill has feed operations in Canada, Thailand, Japan, Malaysia, the Philippines, South Korea, Taiwan, Brazil, and Spain. In 1988 Cargill formed a joint venture to produce poultry feed in China. (Smith, 1988a:1).

Ferruzzi has feed operations in Italy, France, Taiwan, The Netherlands, Portugal, Puerto Rico, Trinidad, Japan, South Korea, Africa, and the Middle East. In 1986, Central Soya (not yet owned by Ferruzzi) formed a joint venture with Marubeni Shiryō Co. of Japan, a large feed manufacturer, and in early 1987 with Cheil Sugar and Co., another large feed manufacturer in South Korea (Feedstuffs, 1987:88). Also in 1987, Central Soya acquired a feed mill in France (Smith, 1987:11). In late 1987 Central Soya formed a joint venture with Great Wall Enterprises, a leading feed manufacturer in Taiwan (Feedstuffs, 1987:88).

In 1988 Central Soya formed a joint venture with the China Export Bases Development Corporation, which is China's largest broiler producer, to manufacture livestock feeds (Smith,

1988b:1). According to Thomas G. Hauenstein, vice president for international feed operations, "we are pleased to secure a position during this early stage of the development of the Chinese commercial feed industry" as this will "anchor" Central Soya's presence in China (Smith, 1988b:39).

In 1989 Central Soya purchased one of the largest marketers of feed premixes in France (Feedstuffs, 1989d:10). In 1989 Ferruzzi entered into an agreement with the USSR to work with livestock producers to improve feed efficiencies (Spear, 1989:4). In 1990 Central Soya formed a joint venture with the second largest Hungarian feed company, Agard, to produce animal feeds in Europe. In 1989 Central Soya entered into a similar agreement with a Polish cooperative to manufacture animal feed concentrates (Feedstuffs, 1990b:8). In 1990 Central Soya formed a joint venture with Yugoslavian firm to build a soybean concentrates plant (Feedstuffs, 1990c:11).

Next we turn to a review of the TNC's activities geared for international export markets (Table 11). Tyson and Cargill have recently established poultry operations especially designed for export production. Five Japanese firms, C. Itoh, Mitsubishi, Mitsui and Co., and Ajinomoto, and Nippon Meat Packers have also invested in existing operations and/or set up new operations for poultry export production, mostly back to Japan.

In 1989 C. Itoh of Japan, Banco Nacional de Mexico and Tyson Foods formed a joint venture called Citra with Empresas Provemex S.A. (brand name of Trasgo), the second largest broiler producer in Mexico, to market deboned poultry products in Japan and other Far East countries. Citra, a totally new production facility, will process and market broilers produced in Mexico and also those grown by Tyson in the U.S. The broilers grown in Mexico will go to the Mexican domestic market while those produced by Tyson in the U.S. will be shipped to Mexico, further processed by Citra and exported to Japan (Tuten and Amey, 1989:28).

**TABLE 11: Summary of Major TNCs' Activities for Export
by Country and Destination
(J/V = joint venture)**

Tyson:	J/V C.Itoh, Trasgo in Mexico to Japan
Cargill:	J/V Nippon Meat Packers in Thailand to Japan
Mitsubishi:	J/V Perdigao in Brazil to Japan
Mitsui:	J/V Malayan Flour Co. in Malaysia to Japan
Ajinomoto:	J/V d'Osato Ajinomoto Alimentos S.A. in Brazil to Japan
Nippon Meat Packers:	J/V Cargill in Thailand to Japan

In late 1989 Cargill announced a joint venture with Nippon Meat Packers, one of Japan's largest, to grow and process poultry in Thailand for export to Japanese markets. Cargill will coordinate the operation and construct all facilities while Nippon will sell the processed meats in Japan and non-US markets. (Feedstuffs, 1989b:7; Broiler Industry, 1990a).

Besides Thailand and Mexico, Japanese firms are also setting up operations in Brazil and Malaysia. One Brazilian operation is partially owned by Mitsubishi while another Japanese firm, Ajinomoto, owns 50% of a new Brazilian poultry operation (Broiler Industry, 1990b:12). Mitsui and Co. also has a joint venture with Malayan Flour Mills Bhd. of Malaysia to produce broilers in Malaysia for the Japanese market (Broiler Industry, 1989a:106).

Analysis:

Data in Section A suggests that comparative advantage dictates that TNC activities targeted for exports should be located in countries such as

Brazil and Thailand. TNC activities targeted for domestic/local production and consumption should be located in strong consumer markets such as U.S., Japan, USSR, Brazil, and Hong Kong. This is in keeping with the hypothesis that suggests looking for the lowest cost production sites and the best consumer markets. The lowest cost production sites are the developing countries with cheap labor, ample grain, low government intervention, and low environmental constraints, sites like Brazil and Thailand, and maybe Malaysia. Looking at Table 12, we see that Thailand has the highest percent increase in exports but Brazil has a decrease. This downward trend in poultry exports in Brazil can be attributed to several factors: (1) increasing domestic demand, (2) red meat shortages leading to a government imposed restriction of poultry exports, and (3) increased competition from the EC and the US whose export subsidy programs captured much of Brazil's Middle East markets (see Table 5) (Ahmed, 1988:30; Mills, 1988:60; Bishop et al., 1990:16).

**Table 12: Exporting Countries - Changes in Production;
Exports as a Percent of Production;
and Percent Increase in Exports -
1985 - 1989**

Increase Country Exports	Percent Increase in Production	Changes in Exports as Percent of Production		Percent in
		1985	1989	
US	+25	2.6	3.0	+54.5
Brazil	+25	17.7	9.0	-34.0
Thailand	+22	10.4	17.0	+51.0
France	+12	23.9	26.0	+23.4
The Netherlands	+18	40.0	52.0	+27.4
Hungary	+24	39.5	48.0	+40.5

Source: Compiled from Tables 2 and 4

Data from Section B shows that the selected firms exhibited investment in domestic production in several sites identified in Data Section A as major consuming countries, including Japan, China, the EC and the USSR. Many of these activities are feed operations. Joint ventures in China by Ferruzzi and Cargill positioned these companies for that growing market. Joint ventures by Ferruzzi and ConAgra in the Soviet Union and Ferruzzi's joint ventures in Hungary, Poland, and Yugoslavia favorably position these firms in the socialist countries.

Tyson, Cargill, and Ferruzzi have feed operations in Japan to service that expanding market. ConAgra has feed interests in Europe and Cargill has extensive feed operations in the Far East, Southeast Asia, Spain and England. Ferruzzi has extensive feed interests in Europe and several operations in the Far East, the Middle East, and Africa. As well, all have substantial operations in the U.S., the largest market for poultry meat.

The hottest market area, the Far East, has significant TNC activity. The opening of the socialist world to TNCs solely through the use of joint ventures to increase livestock productivity is another interesting point. These activities

coincide with the concept that the TNCs should be positioning themselves where domestic/local consumption is increasing and/or can be expected to increase.

Data from Section B also shows that we did not find very many activities in global sourcing targeted especially for export production. The ones that we found fit the comparative advantage established in Data Section A relatively well, including low labor costs, available feed, low government intervention, and low environmental constraints. Government intervention by the Brazilian State in the late 1980s to maintain an inexpensive meat protein source domestically highlights the reason TNCs feel they need alternative global sources to reduce supply uncertainties. This could be a reason for Mitsubishi's recent investment in Malaysia, i.e. to provide it with an alternative source to Brazil. Obviously, Data in Section B shows that the Japanese TNCs are very active.

Cargill's and Nippon Meat Packer's joint venture in Thailand and Mitsubishi's and Ajinomoto's investments in Brazil support our hypothesis that TNC's are globally creating and sourcing a poultry agro/food complex. While not defined as sites with comparative advantages to

attract global sourcing, both Tyson's and C. Itoh's operation in Mexico and Mitsubishi's operation in Malaysia partially supports this thesis. Cheap labor is present but at least some feed supplies would need to be imported. It would seem that for Tyson, the Citra operation in Mexico is a way of "sourcing" nearby cheap labor to further process its products en route to Japan. The most interesting part of the global poultry agro/food complex is the backward integration exhibited by the large Japanese firms as they "source" to meet rising demand in Japan and the Far East.

Conclusion:

This analysis supports the hypothesis by documenting the existence of significant activity in the global poultry agro/food complex by U.S. and other TNCs. Our investigation shows that TNC's are locating their global poultry and feed operations where domestic consumption is expanding and global production is cheapest. The comparative advantages for producer and consumer nations generally match the activities of TNCs. Some firms have several global sites from which to "source".

The more important point here is that the cost of labor becomes a key factor in the location of production. Firms like Cargill and Tyson are looking outside the U.S. for cheaper labor to process deboned products for the Far East. It is cheaper for Tyson to ship its slaughtered poultry to Mexico and process it there than pay the higher priced labor in the U.S. Several Japanese firms are doing the same. TNCs have taken advantage of Thailand's low labor costs to increase production. As a consequence the exports of poultry from Thailand have increased while poultry exports from the U.S. have declined (see Table 5). This is an example of what Sanderson (1986) refers to as "the new international division of labor". The recent internationalization of capital and the "turn-key" transferability of poultry production makes it possible for TNCs to make such decisions and source "globally". By so doing the TNCs are able to avoid restrictive policies of individual nation/states which are designed to protect or improve the quality of life of the citizens of those countries.

While the poultry agro/food complex is a logical starting point for the investigation of a world food system or feed grains/protein source complex controlled by TNC's, a complete analysis must be expanded to include other commodities used as feed or food crops. By concentrating on single commodities one misses the "cross commodity" aspect of the emerging food system. This is why we added the feed aspect to this paper. By adding the feed system to our analysis we can predict where expected future TNC poultry operations will occur.

A fuller analysis of the poultry meat complex would require analyzing the involvement of the TNCs highlighted above in the production of other commodities and in other stages of the food system from agricultural chemical production to food processing. In example Cargill has beef operations in Brazil, Honduras, Canada, and the U.S. (Cargill, 1990). ConAgra has beef operations in the U.S. and Australia (Feedstuffs, 1990d). This is the classic example of global sourcing that Sanderson (1985) refers to as the "world steer". In 1990 ConAgra bought Beatrice to become one of the largest food firms in the world (Smith, 1990:1). ConAgra has several other joint ventures around the world (Heffernan, 1990).

Ferruzzi is the largest fruit and vegetable processor in Brazil and has several million acres in farming operations in Europe, South America, and North America (Leidahl, 1987:33). In 1989 Central Soya and Mitsubishi formed a joint venture in hog production in the U.S. (Feedstuffs, 1989c:6). These are just a few examples of these TNCs' global reach.

The examples cited give an indication of the increasing global reach of the TNCs. Many questions are raised concerning the social impact of these changes. One of the major questions focuses on the usefulness of individual countries as a unit of analysis when focusing on the global movement of food. The recent GATT (General Agreement on Trade and Tariffs) discussions have focused exclusively on countries and their agricultural and trade policies. The emerging food trade issues must be concerned with the policies of the TNCs. In fact the growing question is whether any country or set of countries can truly control their own food system in light of the shifting power relationships in the emerging global system.

**Table 2: Global broiler production in major trading countries
(1000 metric tons (mt))**

	1985	1986	1987	1988	1989
Exporters					
United States	7865	8262	9105	9473	9820
Brazil	1530	1680	1865	1860	1900
France	1287	1328	1408	1434	1440
Thailand	470	507	540	556	575
Hungary	400	445	478	490	498
Netherlands	425	442	471	485	500
Importers					
USSR	2816	2988	312	3200	3300
Japan	1395	1421	1465	1480	1495
West Germany	357	377	389	411	420
Saudi Arabia	186	196	236	249	261
Hong Kong	38	42	40	39	38

Source: FAO, USDA, ZMP, Dutch Poultry & Egg Board

Table 3: European Community Poultry Meat Production (1000 mt)

Country	1970	1980	1985	1986	1987	1988	1970-88 % change
France	637	1,122	1,272	1,325	1,393	1,434	125
U.K.	592	754	875	922	999	1,056	78
Italy	648	953	929	940	982	996	54
Spain	499	762	810	759	790	829	66
Netherlands	292	377	425	442	471	485	66
West Germany	258	374	357	376	389	411	59
Portuga	153	164	159	162	197	205	287
Belgium & Luxembourg	116	134	159	169	172	186	60
Greece	67	144	146	146	148	150	124
Denmark	79	97	115	115	113	117	48
Ireland	30	50	54	57	58	59	97
EC-12	3,271	4,931	5,301	5,413	5,712	5,928	81

Portugal and Spain added to EC total prior to their entry in 1986.

Source: For. Agri. Service., U.S. Dept. Agri.

Table 4: Major trading countries of poultry meat (1,000 mt)

	1985	1986	1987	1988	1989
Exporters					
United States	211	276	363	382	326
France	308	345	345	381	380
Netherlands	204	214	235	257	260
Hungary	158	182	207	218	222
Brazil	272	236	214	200	180
Thailand	49	42	40	39	38
Importers					
Japan	106	180	204	281	300
Saudi Arabia	152	163	190	196	150
USSR	142	175	169	170	170
Hong Kong	113	123	148	162	167

Source: FAO, USDA, ZMP, Dutch Poultry & Egg Board

Table 6: Global Poultry Consumption 1985-1989 (1,000 mt)

Country	Consumption		Percent Change	Imports as % Consumption	
	1985	1989		1985	1989
US	7744	9494	+22		
Brazil	1458	1720	+20		
France	979	1060	+8		
Thailand	421	527	+25		
Hungary	242	276	+20		
The Netherlands	221	240	+14		
USSR	2958	3470	+17	5	5
Japan	1501	1795	+20	8	20
West Germany	573	675	+18	60	61
Saudi Arabia	338	411	+22	82	57
Hong Kong	114	243	+113	297	439

Source: Compiled from Table 2 and 4.

Table 5: International Trade Flow of Poultry Meat for Major Exporting and Importing Countries (1,000 mt).

Exporting Countries	Importing Countries										Total		
	Saudi Arabia	Gulf States	Iraq	Egypt	Sub-Sa Africa	USSR	EC	Caribb-eans	Japan	Hong Kong		Others	
U.S.	1964	3.6	2.3	0	8.3	1.4	0	7.9	45.7	58.2	33.9	73.7	230
	1965	3.1	1.9	0	10.1	0.3	0	6	45.9	47.4	42.8	74.4	231.9
	1966	2.5	1.5	0	29.7	0.3	0	12.4	52.8	78.8	37.1	79.4	294.5
	1967	2.4	1.1	58.4	27.4	0.8	0	14.6	50.8	80.1	57.3	67.3	360.2
EC	1964	119.9	105.6	0.3	8.5	43.3	0.5	[375.6]	20.7	2.1	6.5	45.1	375.5
	1965	98.4	91.5	0.4	2.1	50.3	2.4	[398.1]	20.1	2.8	8.4	65.3	342.1
	1966	82.5	75.8	0.2	4.5	55.7	22.3	[467.9]	17.2	3.5	7.8	79.5	329.5
	1967	103.7	46.2	4.8	6.7	85.1	0	[464.2]	3.7	2.9	13.4	108.8	375.3
Brazil	1964	92.8	31.7	47.5	63.3	2.5	0	13	0	10.5	0.4	18.6	280.3
	1965	86	35.2	65.6	50.5	2	0	18.2	0	15.3	2.5	4.2	279.3
	1966	92.9	43	25	5.5	5.5	0	17.7	0	17.2	2.2	71.6	232.2
	1967	92.3	40.6	13.4	0.3	10.8	0	8.7	0	22.1	4.8	23.2	216
Hungary	1964	15.6	2.7	0	5	5	60.7	19	5	0	0.6	48.2	162
	1965	8.8	2	0	5	5.5	63.8	35	5.5	0	0.8	29.6	156
	1966	2.5	1	0	2.4	0	101	31	0	0	0	43.1	151
	1967	2.4	1.9	0	4.2	0	110	36	0	0	0	56.5	210
Thailand	1964	0	0.5	0	0	0	0	0	0	31.2	0.1	3.1	34.8
	1965	0	0.2	0	0	0	0	0	0	33.2	0.6	3.8	37.8
	1966	0	0.6	0	0	0	0	0.9	0	67.6	1.8	4.8	66.7
	1967	0	0.5	0	0	0	0	0.7	0	79.9	1.3	4.6	87
Total	1964	232.1	142.8	47.8	83.1	52.2	61.2	39.9	71.4	96.9	41.5	189.5	1082.6
	1965	196.3	130.9	66	67.7	56.1	66.2	59.2	71.5	96.7	55.1	177.3	1047.1
	1966	180.4	121.9	25.2	42.1	61.5	123.3	62	70	157.1	48.9	278.4	1102.9
	1967	200.8	90.3	76.6	38.6	96.5	110	60	54.5	186	76.8	279.4	1268.5

[] Denotes EC intrtrade 1/ Preliminary data 2/ Estimates represent mostly un boned meat

Source: Ahmed, 1988:26.

Notes:

1. This paper is a shortened version of a book chapter length manuscript (Constance and Heffernan, forthcoming).

2. For the purposes of the paper, poultry refers to broiler meat production. Turkey is also a form of poultry meat.

3. Our method is to regularly review numerous agribusiness trade journals, annual reports of major firms, USDA bulletins, popular press articles, and other sources. Our data begins in 1980, with a few important 1970s entries, and proceeds to the present.

4. See table 3 in the Appendix for a breakdown of EC production by country.

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RESUMEN

El Complejo Global Agroalimentario Avícola

La globalización del sistema alimentario constituye un aspecto que crecientemente concierne a varios estados/nación para lograr una verdadera seguridad alimentaria. El análisis parte de la hipótesis de la existencia de un sistema agroalimentario avícola, el cual ha sido construido por las corporaciones transnacionales. Nuestro foco de atención es el concepto de "recurso global", argumentando que el aumento del poder económico de las corporaciones transnacionales limita las posibilidades individuales de los estados/nación y apunta hacia el final de sus políticas agrícolas nacionales. Igualmente, que con el crecimiento del carácter transnacional de las grandes corporaciones existe una menor utilidad de los estados/nación o de las mercancías, individualmente consideradas, y están perdiendo valor como unidades de análisis. Concluimos que las corporaciones transnacionales norteamericanas, europeas y japonesas están creando un verdadero complejo agroalimentario avícola, el cual está basado en el concepto de "recurso global". Nosotros encontramos sugerencias de que estas mismas corporaciones transnacionales también son muy activas en otros importantes sectores de mercancías agrícolas.

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