Environmental and Social Consequences of Economic Restructuring in Australian Agriculture

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The changing nature of Australian agriculture is such that corporate farms are becoming more common, family farms are disappearing, and the remaining family farms are losing autonomy by the increasing corporate control of commodity distribution networks, by the increasing significance of contract farming, and by new developments in biotechnology. These changes in agriculture have considerable environmental impact and need to be considered at a policy level if widespread environmental degradation is to be avoided. Furthermore, there are enormous social consequences of these changes that have wide ranging effects not only on the nature of farming but also on the nature of community settlement in rural areas of Australia.

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Introduction: Rural Restructuring in the Semi-Periphery[1]

Social change rather than social stability is a characteristic of non-metropolitan regions within advanced capitalist societies. However, change does not occur haphazardly or independently of structural forces within the wider economy but is a direct consequence of alterations within the capital accumulation process. This, itself, is at the very Centre of production (and consumption) relations within those societies. To grasp the nature of change within rural society, it is necessary to understand the dynamics of capital accumulation and to recognize the practical manifestations of patterns of accumulation modified by state regulation.

Structural change has several different types of impacts and occurs at several levels. This paper is concerned in particular with identifying the capitalist processes that are facilitating the increasing influence of transnational agribusiness in the agricultural production of Australia and other semi-peripheral nations, and with the attendant social and environmental impacts of those processes.

Processes Increasing Capitalist Influence in Agriculture

The Demise of the Post-War US Hegemony

An hegemonic relationship between accumulation and regulation is considered to have been dominant since the second World War.

This has been described as 'Fordism' and is a regime typified by Taylorist labor processes, the mass production and distribution of consumer goods, the extension and consolidation of trade unionism, and the development of the welfare state (that is, a basically Keynesian solution to the contradictions inherent in class-based post war capitalism). For reasons associated with changes in the international arena (including the collapse of the Bretton Woods agreement and oil price rises in the 1970s), inflation and commodity price uncertainties in the 1980s, and worldwide recession and intensified competition in trade during the 1990s (see Buttel and Gillespie, 1991, Goe and Kenney, 1991), the Fordist mode of accumulation and regulation is considered by some as being superseded by a post-Fordist regime, one characterized by new industries, production methods, organizational forms, class relations and state policies (see Mathews, 1989).

The extent to which a transition to a full-blown post-Fordist economy is occurring or has occurred, and the characteristics of post-Fordism, are debatable issues. Nevertheless, a significant change is occurring in the organization of transnational capital and in the organization of society. Whether this represents a fundamentally different mode of production, or whether it represents new forms of organization under essentially the same mode of production is not yet clear. It is clear, however, that many post-Fordist characteristics, such as niche marketing, product diversity, decentralized production, transformation of work, and global sourcing, are being adopted by transnational corporations. Despite post-Fordist rhetoric about craft production and intelligent consumption patterns that would reduce the significance of transnational corporations, it is doubtful whether any move to a post-Fordist economy represents any significant threat to their power, and quite likely, post-Fordist patterns of production are being adopted by transnational corporations in order to enhance their operations.

Restructuring of the US economy has resulted in a major decline in traditional sectors of industry--including steel manufacture, automobiles, farm machinery and electronics. Firms have responded to increasing global competition and reduced profitability by retrenching labor, by automation, and by moving to new areas of weaker, cheaper and often non-unionized labor. Another feature has been the merging of businesses, spurred on by the increased economic strength of finance capital (Green, 1988). Goe and Kenney (1991) have argued that the crisis in US agriculture has occurred later than that within the industrial sector. Nevertheless, because of agriculture's quite intimate connection with manufacturing industry and finance capital, it is experiencing the same sorts of restructuring pressures. Agriculture is under pressure to develop new and more productive, efficient and flexible food and fiber production and delivery systems. Information technologies and the application of agro-biotechnologies are viewed as the sorts of responses which will provide capital with opportunities for production flexibility and product diversity. It is perceived that, with the mass markets of the older Fordist regime giving way to fragmented markets based on increasingly differentiated patterns of consumption, the area of greatest profit lies in 'niche' marketing.

The transition from Fordism to post-Fordism is not simply one influencing economic organization. Buttel (1992) following Roobeek (1987), has insisted that economic change has been accompanied by a movement from social democratic to neo-conservative forms of social organization. Trade unions and their influence in industrial relations and national politics have declined, the welfare state and the social wage are being selectively rolled back, economic inequality is increasing, political parties

have declined relative to special interest groups and social movements, corporations and market transactions have become increasingly transnational in scope (and thus less amenable to nationally ordered regulation). As part of this change, political cultures have shifted from an emphasis on mitigating the impacts of private accumulation to that of ensuring the sanctity of entrepreneurship (Buttel, 1992).

For Buttel, the movement from the social democratic (Fordist) regime to the emerging neo-conservative (post-Fordist) regime is represented by the development of a non interventionist state whose policies support a growing corporate elite and an increasingly differentiated working/middle class comprising poorly paid service sector workers, informal sector workers and an emerging urban and rural underclass (those groups who were once protected by the welfare state) (Buttel, 1992).

In summary, there are three likely outcomes of this transition that are important for agriculture. First, the reduced significance of 'mass' markets will greatly disadvantage those nations (such as Australia) producing bulk undifferentiated commodities, particularly in an era of global overproduction. Second, a reliance on new technologies is viewed as necessary in any advanced system of agricultural production. The extension of computing and biotechnologies are perceived as essential to increased production despite their potential to further polarize agriculture (see Goodman, Sorj and Wilkinson, 1987). Third, the demise of the welfare state is likely to translate into even further reductions in support for rural social infrastructure, with impacts felt by farmers and other rural dwellers.

The Globalization of Food Production

With the increasing internationalization of industrial and finance capital, agriculture has become quite vulnerable to decisions made in distant locations. Finance capital has gained an ability to by-pass many of the strictures previously set in place by once protectionist nation states. Two examples of restructuring are, first in the food processing sector (characterized in the 1980s and 1990s by asset stripping, international linkages and buy outs) (see Marsden and Murdoch, 1990) and second, in farming (with credit being provided to transform production relations and to allow the purchase of new technologies).

According to Friedmann and McMichael (1989) and Friedmann (1991), the integration of world capital has blurred any previous distinction between 'agriculture' and 'industry' and that to grasp the changes occurring in farming and in farm-dominated rural regions it is necessary to conceive of an 'agrifood sector' run by transnational corporations which links various elements of rural production to manufacturing and service industries. The agrifood sector has become an intermediary between agricultural producers and food consumers:

> Instead of crops destined for the kitchen pot, agriculture increasingly supplies raw materials to the food processing industry for the production of durable goods. These raw materials become subject to global sourcing and to technically developed substitutions ... Agrifood industries have grown up around two elements in the postwar diet of advanced capitalism: (1) manufactured foods--composed of several agricultural (and/or chemical) raw materials, notably sugar and oils; and (2) livestock products, especially intensively produced poultry and cattle (Friedmann, 1991: 66-67).

The development of a mass diet via industrial food production processes has been one of the outcomes of the development of a global agrifood sector, a sector whose profits were able to grow enormously through their ability to convince consumers that the purchase of takeaway, prepackaged and convenience foods

were a necessary and desirable part of modern living.

With the durable food industry capable of disguising the ingredients of a final product--it was a short step to replacing the costly or unreliably supplied or inferior natural substances with what Friedmann (1991) has labeled 'generic ingredients':

> What is wanted is not sugar, but sweeteners; not flour or cornstarch, but thickeners; not palm oil or butter, but fats; not beef or cod, but proteins. Interchangeable inputs, natural or chemically synthesized, augment control and reduce costs better than older mercantile strategies of diversifying sources of supply of specific crops (Friedmann, 1991:74).

This so-called 'substitutionism' (Goodman et al., 1987) allows a higher degree of control by corporate capital over agriculture because it can, through increased interchangeability of components, by-pass entire products and regions in 'sourcing' its industrial requirements.

The production of beef altered from a largely extensive system to an intensive one. The integration became complete with intensive livestock production being linked with the grain (feedstuff) sector particularly in the US. Since the production of 'global food' is no longer the province of national commodity groups, producers find economic advantage in linking with transnational capital (under its terms) to take full advantage of world demand for agricultural products. Under pressures for product standardization, mixed agricultural production may give way to specialization and monoculture agriculture with negative environmental implications for those peripheral countries into which this form of agricultural production penetrates. According to Friedmann, who evokes the fordist/post-fordist dichotomy as a means of understanding changing patterns of production and consumption, the durable food and livestock/feed complexes have reached their limit. Along with world overproduction, farm crises and the spate of rationalizations and bankruptcies in the corporate food sector, there is an underlying trend within the advanced nations to class-based food differentiation with poorer groups required to purchase increasingly standardized foods, and with privileged consumers enjoying a more varied healthier diet.

There are two important elements in this analysis. First, it is anticipated that the earlier comparative advantage enjoyed by so-called settler states such as Australia has virtually disappeared with the emergence of a global food system after the Second World War. It is doubtful that these countries can exert much control in agricultural development either in terms of choice of commodity or in terms of agricultural production strategies utilized. If TNCs decide that Australia, or other semi-peripheral and peripheral nations, will provide bulk undifferentiated products for mass markets, possibilities in those nations for value adding and for capturing higher priced niche markets will be greatly limited. Producers in these countries will be required to conform to demands of companies which want the separation of livestock and crop growing (the continued movement towards specialized systems of production) and which are unconcerned about the environmental or social impacts of these developments. At the farm level, there are growing pressures for farmers to conform to the upstream and downstream components of transnational capital by utilizing modern inputs and producing corporate-required outputs. By becoming increasingly subordinated by finance capital, producers will have little room to alter production regimes.

Second, given the continuation of the influence of corporations in supplying existing and new (especially Asian) markets with durable foods, it is likely that there will be increasing pressures on the environment. Eco-

logical problems will invariably increase with any intensification of existing practices (see Lawrence and Vanclay, in press). While there may be consumer demand for 'cleaner' (or 'greener') agricultural practices, many of these practices will translate into higher costs of production and so place greater pressure on farmers to increase output as a means of sustaining farm income. This, itself, may cause accelerated environmental degradation, but will also lead to the hastened exit from agriculture of now marginal farmers unable to bear any additional input costs. In conditions where nation states are reluctant to impose tighter regulations for fear of capital flight (as in the semi-peripheral and peripheral nations), it also may result in continued unacceptable levels of abuse of natural resources.

In the period before World War Two and up to the mid 1970s the nation state largely organized agriculture and provided social stability via policies which encouraged the development of mass consumption and high wages. Since then, transnational capital has relieved the state of its regulating role and has organized new production arrangements. For Friedmann and McMichael (1989) two possibilities for future development present themselves: the growth of global institutions (a World Food Board?) aimed at stabling and regulating capital accumulation, or the reassertion of the 'local' and 'regional' aimed at counteracting the power of the transnationals. A globally coordinated system with localized (or regional) control over the use of resources is Friedmann and McMichael's best guess. How producers and consumers in countries like Australia will act--whether as 'victims' of transnational forces or as active players is the reorganization of local patterns of production based on ecological and other concerns--is at this time yet to be determined.

Contract Farming

In contrast to the conventional industrial model of vertical integration, agribusiness tends not to engage directly in on-farm production. Instead, the major means of control by agribusiness is contract farming, 'a system in which companies involved wholly or partly in the processing, marketing or retailing of agricultural goods enter into contractual arrangements with farmers for the supply of a particular commodity' (Burch, Rickson and Annels, 1992: 260).

Contract farming results in a transfer of responsibility for many production and environmental management decisions from the farmers to the corporation--with a consequent loss of autonomy for farmers. Corporate concern about profit and cash flow may result in lower investment in conservation activities than would be undertaken by farmers on their own. Furthermore, where environmental degradation occurs, corporations can, because of international sourcing, simply move to another location for their produce requirements. This creates a situation in which corporations need not be particularly concerned about environmental quality, and can leave adoption of environmental management strategies to farmers to make spurred on by competition between regions for the supply of particular commodities to that corporation. At the same time, this competition creates a situation in which farmers cannot invest in environmental management strategies because of declining terms of trade and reduced flexibility in farming operations.

Individually, farmers engaged in the production of produce for a corporation have little power in the relationship. Corporations maintain control over farmers by threatening not to accept their crop, a situation which would be disastrous for farmers because of the lack of alternative outlets for produce in a particular region. Consequently, growers are vulnerable

to the whims of the corporation. Growers are forced by the logic of the contract system to cultivate intensively and, in order to ensure the quality of their produce to the satisfaction of the canning company, to use excessive amounts of agrochemicals (see Burch et al., 1992). The system also reduces the flexibility of the farmer in that the contract may specify certain practices that the farmer must adhere to, such as the use of specific chemicals. It also limits the choice of crop rotations and alternative commodities available to the farmer because of the monoculture that develops in locations where contracting occurs. Farmers become dependent on the infrastructure provided by the agribusiness corporation, and in semi-peripheral nations like Australia, with a small, geographically dispersed population, the corporations are able to monopolize the processing and handling of produce very easily.

Burch et al. (1992) argue that the complex nature of the agribusiness system is such that the activities involved in contact farming are not satisfactorily coordinated and this has implications not only for the farmer in that there may be contradictory advice, but also for the consumer in that there may be, for example, inadvertent but structurally built-in breaches of regulations relating to the withholding periods for certain agrochemicals. A farmer may be directed by the field officer to spray a crop with a certain chemical, only to be told by the production control manager to harvest the crop. In some case farmers may be given only 48 hours notice to harvest, whereas some agrochemicals have withholding periods of up to 14 days (Burch et al., 1992).

Agro-Biotechnologies

Biotechnology is being heralded in Australia and elsewhere (see Lowe, 1992) as the most appropriate mechanism for both increasing agricultural productivity and overcoming many of the environmental problems associated with modern agriculture (such as the heavy use of pesticides and herbicides). Some consider biotechnologies will create the best opportunities for a sustainable future (Department of Primary Industries and Energy, 1989; Begg and Peacock, 1990; Bureau of Rural Resources, 1991).

Biotechnologies are expected to allow producers to reduce their levels of inputs (and hence costs) while achieving higher levels of output. Embryo technology, for example, may provide opportunities for transferring superior genes to existing cattle herds and sheep flocks at a lower per unit cost than normal breeding techniques. Vaccines created through biotechnology are considered to be superior to those obtained in conventional ways. Bovine somatotropin--a natural protein hormone produced through recombinant DNA technology--will allow more milk to be produced by dairy cattle from the same level of feed thereby increasing profits by lowering milk production costs (see Begg and Peacock, 1990; Baumgardt and Martin, 1991). Experiments in Australian laboratories are designed to confer pest resistance on plants and so reduce or eliminate the need for chemical applications on Australian croplands. The creation of insect-resistant plant species may not only mean that fewer dangerous chemicals will be used in farming but also that the costs to farmers will be reduced. Biotechnologists are also working on ways to 'mop up' chemical pollution and to convert what are now waste materials from food manufacturing into new products. Proponents estimate that biotechnologies may reduce the use of natural resources by between 40 and 60 percent allowing farmers to move rapidly towards sustainable production (Begg and Peacock, 1990). Threats to the further degradation of lands are expected to be averted through new genetic manipulations and applications which reduce input use and allow out-

put increases without soil loss (Bureau of Rural Resources, 1991).

Since biotechnologies are 'enabling technologies', they are likely to have different outcomes according to the purpose of their application. For Redclift (1990) biotechnology will fulfill its promise if it can encourage the development of a low-input, high-tech system of sustainable agriculture in which there are reduced applications of proprietary inputs. The hope then, is that in line with growing public concerns for the environment, scientists will develop plants and animals with pest and disease resistance, salt tolerance and productivity-enhancing qualities which will overcome many of the problems associated with current agricultural practices (see Lowe et al., 1990; Baumgardt and Martin, 1991). However, evidence from both Australia (Hindmarsh, 1992) and abroad (Lacy et al., 1988; Busch et al., 1991; Goodman and Redclift, 1991) indicates that the biotechnological promise is, in the context of existing social arrangements, unlikely to be fully realized.

There are a number of concerns. First, environmentalists point out that if corporate capital is involved in the production and distribution of biotechnologies, the profit motive will distort both the basis of experimentation and the likelihood of benefits being distributed evenly amongst producers. Thus, the production of herbicide-tolerant plant species is not designed to free agriculture from chemicals but to have farmers purchase a proprietary package of herbicide and herbicide-tolerant seeds (Kloppenburg, 1988; Busch et al., 1991) something which will further the dependence of farmers on the agrochemical industry and increase input costs for producers. Furthermore, with herbicide use continuing at high levels the possibility of chemical resistance amongst weeds is increased and there is a greater likelihood of ground water pollution (Otero, 1991).

Secondly, there is also no proof that genetically modified organisms will be environmentally benign. They may proliferate to occupy 'niches' in ecosystems thus displacing other organisms or produce substances toxic to other organisms. Here, the use of supposedly environmentally friendly genetically modified organisms may result in environmental decimation. Ironically, the new products may be even more dangerous than the dangerous chemicals they have been designed to replace (see Busch et al., 1991).

Thirdly, if costs of biotechnological inputs are reasonably high--which they are expected to be given that they will be corporate, rather than state-released, products--the adoption of the new biotechnologies will be limited to the well-financed and usually larger farmers. That is, many of the possible environmental benefits (of reduced chemical applications) would not, in any case, be available to often-struggling middle 'family' farmers. The very people who might have been most advantaged will inevitably fall behind, concentrating food production among those in the wealthier sector of farming. In the US employment in farming is declining faster than virtually all other occupations. With existing trends heightened by biotechnology there will be fewer farmers (Lacy et al., 1991). There is evidence that, in terms of environmental management, corporate-linked agriculture is no better, and is perhaps worse, than family-farm agriculture (see Lawrence, 1987; Strange, 1988; Lawrence and Vanclay, 1992, in press).

Byman (1990) considers it to be somewhat worrying that new technologies are being advanced as the answer to the problems of environmental pollution and oversupplied markets, when the past applications of technologies have helped to cause those problems in the first place. Redclift (1987) too, has argued that the future of the advanced societies--such as the US, UK and Australia--is premised upon

the transformation of the environment, yet the transformation of the natural environment is occurring in a manner which reduces long-term productivity. The 'environmental contradiction' is viewed as the central contradiction of advanced capitalism (Redclift, 1987; and see O'Connor, 1990).

The global economy is dominated by transnational capital and it is the large, transnational agribusiness firms which are controlling biotechnological development in agriculture (Goodman et al., 1987; Kloppenburg, 1988; Otero, 1991). Farming will exist, in its present form, only for as long as it can conform to the profit-making requirements of firms supplying agricultural inputs and of firms involved in the food processing industry--those using either the direct products from farming or farming products converted for use for industrially produced 'biomass'.

Value Adding Activities

Another strategy being promoted in Australia is to 'value add' to products before they leave Australia's shores. At present the $15 billion of agricultural goods Australia exports is currently converted into $80 billion abroad. It is argued that if this $15 billion worth of agricultural products which Australia exports in largely unprocessed form were to be further processed in Australia, there would be higher levels of employment, higher levels of income, and enhanced foreign currency earnings (see Bureau of Rural Resources, 1991).

According to the Department of Primary Industries and Energy (1989:7):

> Value adding is the essence of economic growth. Value adding is the means by which individuals and businesses meet their objectives to prosper and grow ... if a country wants to trade for the purposes of economic growth without subsidies, it will only do so via industries, businesses and individuals who are able to compete successfully ... Hence, value adding and the competitiveness of agribusiness are inexorably linked.

The opportunities seen to be available to Australian producers currently producing largely undifferentiated food and fiber for world markets is to link with agribusiness in a manner beneficial to both parties (see National Farmers' Federation, 1993). For agribusiness, the markets abroad are well known and already penetrated by branch firms, providing an easy entree for those producers who seek agribusiness affiliation. For farmers, the sale of specific product lines which can be readily distinguished from those of competing producers will allow consumer brand identification and it is presumed that this will result in increased profits. With extra income, once-struggling farmers will be able to overcome debt problems and begin to undertake much needed environmental repair work. In this scenario, the further integration of family-farm agriculture and international agribusiness will be a cornerstone to both improved environmental sustainability and the continuation of high export earnings--not from any increased volume of exports, but the sale of higher value goods (National Farmers' Federation, 1993).

The positive environmental flow-on effects suggested above are part of a healthy and prosperous agricultural sector. Would family-farm agriculture be 'reinvigorated' by agribusiness? Agribusiness firms are renowned for their ability to organize their production and distribution activities in the input-supply and output-processing sectors without, as it were, getting their hands dirty on the farm (see Lawrence, 1987; Mooney, 1988; Burch et al., 1992). Market strength and management strategies enable agribusiness to leave the production risks with the farmer, while purchasing raw materials from the farmer as cheaply as possible. It is not on the farm where value is likely to be added but off the farm in food

processing factories. The individual farmer has little opportunity for value adding and product differentiation on the farm and is therefore unlikely to receive profits received by those involved in the processing industries. The question that remains is--can Australia benefit from value adding activities in circumstances where transnational agribusiness assists in the transformation of family-farming activities?

The answer would seem to be no. Foreign interests have determined that Australia is not the most appropriate location for value adding. For example, in 1988 five of Australia's top agricultural exporters were Japanese trading houses which sent abroad, in one year, approximately $7 billion of unprocessed food and fiber (*Financial Review*, 15 March 1988).

Attempts by successive Australian governments to diversify the economy and to have foreign capital invest in food, fiber (and wider) manufacturing appear to have failed. In 1972, so-called 'elaborately transformed manufactures' (embodying high-tech processing and knowledge-intensive applications) comprised 13 percent of Australia's exports. However, this had fallen to 9 percent by 1986 (Fagan and Bryan, 1991:15) and to 8 percent by 1989 (Kulkarni, 1991). For the 1980s, Australia imported value added imports at a rate faster than both domestic growth in GDP and the export earnings of food and materials (Jones, 1989). By the 1990s, Australia had reverted to its 1930s economic base selling 'simply transformed manufactures' (unprocessed or semi-processed raw materials) in exchange for manufactured goods.

This has placed Australia in a difficult economic position. Farming is, at best, a slow growing sector which is susceptible to world oversupply and deteriorating terms of trade. More importantly, Dunkley and Kulkarni (1990:20) suggest:

> Trade in [simply transformed manufactures] is unlikely to revive in the near future because of technological change raising global productivity, agricultural subsidies in major countries, a trend to self-sufficiency in developing countries, the emergence of new primary suppliers and possible reduction in demand for [some rural] products for ecological reasons.

Australia's manufacturing industry primarily constitutes branch plants of foreign transnational companies. It is being progressively locked out of Asia-Pacific markets because of cheaper production costs overseas, particularly in South-East Asia. There is no reason to believe that local or foreign agribusiness firms will discover advantages in food and fiber processing in Australia that they have been unable to obtain elsewhere. Labor in Asian countries is cheaper than in Australia so it is likely that raw materials will continue to be sent abroad in unprocessed form. This has been begrudgingly admitted by the Federal Government and has been more-or-less accepted by the National Farmers' Federation (1993). According to the Department of Primary Industries and Energy (1989:15):

In considering the question of adding value to Australian agricultural products, it is reasonable to argue that the value adding activity will often take place outside Australia (by companies that may or may not be Australian owned), and that this activity will be initiated by companies positioned near the retail end of the channel rather than near the raw material end.

Without tariff protection which has provided support for Australia's 'infant industries', there are few incentives for firms to move beyond simple semi-processing activities. Significantly, the processed foods area--that described as providing the best opportunities for value adding (Bureau of Rural Resources, 1991)--now forms a declining proportion of total food exports (Wettenhall, 1991). Bulk agri-

cultural commodities constitute approximately 70 percent of Australia's exports (*Australian Farm Journal,* June 1991) and are expected to continue to do so (Department of Primary Industries and Energy, 1989).

Beef Feedlotting

Feedlot beef enterprises provide another example of change within rural Australia. Feedlot/abattoir complexes are appearing along the inland river systems to take advantage of the reliable supply of water, grain and (unfattened) store cattle. Investment from Japan, Korea, Taiwan and Singapore has been used to develop vertically integrated complexes with direct links to Asian markets. The recent developments initiated by firms such as TKK, Mitsubishi, Marubini, Nippon Meats and Itoham have included feedlots of up to 60,000 head. In the Riverina region, an area traditionally known for its broadacre cropping and extensive grazing, feedlots with the capacity to house 130,000 head and to turn off 250,000 animals each year, have commenced operation (*Land*, 31 January 1991).

With liberalization of the Japanese beef market, beef exports are expected to triple by 1995 (*Sydney Morning Herald*, 17 July 1991). Australian farmers will be contracted to supply grain and unfattened animals to the new complexes. Like feedlotting, contract agriculture is relatively new to Australia (*Australian Farm Journal*, May 1991:85) and farmers who have lost the protection of marketing boards and/or other support are expected eagerly to seek integration with the feedlots. According to the Executive Director of the Lotfeeders' Association: 'feedlots are going to change the face of the Riverina region, creating a new economy based on supplying grain and cattle to the feedlot industry' (*Land*, 17 January 1991:10).

Labor relations in the agricultural sector are also being targeted for change. Workers in the feedlot/abattoir complexes are expected to accept 'more flexible and internationally competitive labor arrangements and awards' (Department of Primary Industries and Energy, 1989:67). The first non-union based contract working team has already been employed in an Australian slaughter plant (see *Stock and Land*, 5 September 1991) with the support of farmers and the National Farmers' Federation. This is in contrast to the high levels of unionization normally experienced in Australian workplaces. Furthermore, rural workers, in current times of financial distress for Australian agriculture, are being required to place rural community interests ahead of union loyalty (Australian Farm Journal, May 1991). There is large-scale retrenchment from rural based industry with migration of non-locals back to urban areas. The remaining workers tend to be farmers working off the farm, or those who have a farming background. They often do not share traditional blue-collar union ideology, avoid union membership and are therefore vulnerable to structural adjustment in the industrial workplace.

Feedlots are unlikely to be environmentally or socially beneficial to Australian farmers (Lawrence and Vanclay, in press). While there is some debate about whether lot-fed beef is fordist or post-fordist, it undoubtedly does represent some form of value adding. However, given the extent of vertical integration with the feedlot industry, the majority of the profits from feedlot enterprises are expected to flow not to Australian growers but to overseas-based companies. Australian farmers supplying source stock and grain feed on contract are likely to have little flexibility or autonomy, and given the relative abundance of these inputs little power to set the price. Australian farmers are likely to find that they are suffering twice, both in terms of decreasing prices for their outputs and increasing input costs, and also in terms of declining autonomy.

Feedlots also have an environmental cost. One estimate is that effluent from a feedlot of 40,000 head (the size of those proposed) is equivalent to that produced by a city of 500,000 people (*Land*, 15 January 1989). Cities of this size require waste treatment works in the order of US$80 million. Currently, the method of treatment of feedlot effluent in Australia is to contain the liquid in holding ponds and to sun-dry manure for sale to local farmers (*Land*, 17 January 1991). However, the soils in many parts of Australia where the feedlots are proposed are rain saturated for about a quarter of the year and it is likely that run-off will eventually reach the already-polluted inland river systems (see *Narrandera Argus*, 21 August 1990). One state's Pollution Control Commission's negative assessment of feedlot beef complexes along the inland waterways was ignored by that State Government which gave approval for their development (*Murrumbidgee Irrigator*, 22 February 1991). While problems of overgrazing and overcropping associated with conventional agriculture have already caused havoc, the removal of pastures and the replacement with grain to supply feedlots may intensify current environmental problems.

Economic and Social Impacts of Rural Restructuring

There have been different outcomes in different countries as the new forces of economic change have begun to impact upon regions within nation states. In countries of the European Economic Community there has been a move from production strategies which have tended to endorse continued expansion of output to those which preserve rural communities and protect the environment (Commins, 1990; Lowe et al., 1990; Berlan-Darque and Klaora, 1992; Glasbergen, 1992; Lowe, 1992). With agriculture gradually losing its status as the major form of enterprise in rural regions, policy is coming to reflect the variety of concerns of rural and urban dwellers. In the US, where an increased diversity of economic activities (particularly the growth of decentralized service and light manufacturing industry) has helped to reduce rural community dependence on agriculture (see Swanson, 1988), new employment opportunities have arisen. There is evidence that changes are not necessarily beneficial for all regions or for all people within all regions experiencing change: labor market segmentation has been one outcome (Summers, Horton and Gringeri, 1990).

Australian governments have responded to global restructuring in a number of ways. At the macro level they have been prepared to integrate their economies into international circuits of capital by deregulating banking, removing regulations on capital flow, orchestrating high interest rate policies as a means of limiting domestic demand and of attracting investment dollars, and seeking to reduce real wage levels to achieve labor competitiveness.

The changes have included measures to provide greater market determination to capital allocation, reducing the costs of and improving flexibility in relation to resource allocation, and encouraging greater economic competition (see Stilwell, 1993).

In Australia, the following measures have been applied as a means of integrating the Australian economy into that of the Asia-Pacific Basin:

- reduction of import tariff levels,
- freeing of interest rates,
- floating of the exchange rate and lifting of foreign exchange controls,
- deregulation of the finance and banking industries,
- conversion of traditional government departments into new state-owned enterprises,
- privatization of state-owned enterprises,

- deregulation and privatization of state monopoly control in primary industries,
- deregulation of the airline industry,
- forced competition in the telecommunications industry,
- reductions in public-sector and welfare spending,
- proposals for a value-added tax (Goods and Services Tax).

In relation to agriculture, the vehicle for such integration is the agribusiness corporation. Statutory marketing authorities--once the bastion of family-farm commodity marketing--are viewed as standing in the way of the private corporations (National Farmers' Federation, 1993). It is the latter, which, through strategic links and size advantages, will be capable of providing value-adding to food and fiber production and will help to reorganize farming to reduce inefficiencies (Department of Primary Industries and Energy, 1989).

The agribusiness model--requiring high inputs to achieve high outputs--is likely to alter the pattern of agricultural production in Australia with the effects being increased output, greater pressure on the environment and an increased need for adjustment of those farmers unable to compete under the new rules (Lawrence and Vanclay, 1992; Lawrence and Vanclay, in press). Farmer stress--another obvious consequence of the combination of forces 'rationalizing' agriculture--is one of the least well understood dimensions of the economic restructuring of farming.

It would appear that the removal of the protective mantle of policies which supported and reproduced (albeit, allowing for appropriate structural adjustment of those deemed to be least efficient) family-farm based agriculture will expose producers to further economic stress. For example, any move to post-fordist agriculture will require producers to move from bulk commodity to 'niche' market production. This will require farmers to alter existing production regimes and grow new crops or animals using a variety of new inputs (including advanced information technologies). If, as might be expected, this results in the polarization of agriculture--with the more capital-intensive agribusiness-lined farmers increasing their share of commodity production and sector income--what will be the fate of those unable to compete?

Some of the likely consequences for this group may be:

- reducing farm expenditure to 'match' reduced farm income levels,
- further borrowing to allow expansion and/or change,
- 'pluriactivity' to provide new income sources as a means of supporting a farm-based lifestyle,
- short (and perhaps medium to long) term exploitation of the resource base of the farm as an attempt to improve farm-based income levels,
- selling the farm.

In the first case, the reduction in household expenditure has important social implications. With little money available for entertainment and other social activities, supportive networks may begin to deteriorate with a consequent loss of vitality in the farming district (Lawrence and Williams, 1990; Stone, 1992). With male farmers often being reluctant to seek assistance from counselors (Fairweather, 1989) there is likely to be a hidden problem which might, at times, manifest itself in stress-related behavior including alcoholism, increased domestic violence and suicide. So-called belt-tightening (see Lawrence, 1987) was once an acceptable short-term response to price collapse. The rules of rural production have changed with the winding back of state supports for agriculture. Farmers who might once have adopted belt-tightening as a short-term response (and might have been victims of periodic poverty) are likely to be trapped by

continued low prices and may become part of a new rural poor--unable to sell their farm and unable to trade their way out. While financial counselors are likely to interpret this as an 'equity crisis', it is in reality a structural crisis affecting those producing traditional farm commodities in a world where such bulk products have lost their competitive edge. The future of the traditional family-farm producer in a post-fordist world system is one which needs greater attention.

Some producers will borrow to expand. Again, however, it is not likely to be in the expansion of output of traditional products where major economic benefits are likely to be achieved. While there will be a demand for grain and unfattened animals for the burgeoning feedlot beef industry, this will be with its own limitations (Lawrence and Vanclay, in press). Other farmers may be able to link with agribusiness (and, perhaps, with local grower-owned marketing bodies) to produce for niche markets. Such 'opportunities' will be limited in a geographical sense and by the management skills of individual farmers. It is the traditional family farmer, producing bulk commodities, who will be isolated from recent developments, and who will be likely to find product diversification and farm expansion a major problem. Obtaining the capital to do either of these things will be difficult unless credit suppliers can be convinced of the long term suitability of such developments. And, where credit is obtained, the need for the farmer to 'perform' for the bank or credit agency is likely to intensify both social and psychological pressures on the farmer.

Pluriactivity is an important option for the smaller farmer within a post-fordist era, being viewed as a survival strategy and as a means of integrating farm-based labor into new areas of capital accumulation (Le Heron, 1991). It is becoming a preferred option for those farmers (and family members) seeking alternative occupational opportunities and lifestyle options. With between one third and one half of farm households in Australia being pluriactive (Lawrence, 1987), it is obvious that job opportunities within regional economies become crucial to the general well-being of a large number of farmers.

There is evidence that the growth of tourism may provide the sorts of jobs which farm women (in particular) can successfully combine with farm work (see Share, Campbell and Lawrence, 1991). Niche opportunities provided by ski field development or the farm holiday trade are providing flexibility to farming and so allowing producers to remain in agriculture. However, not all regional areas are likely to experience new injections of capital (Stilwell, 1992). Much of the economic activity associated with tourism in Australia, for example, is coastal while most of the farmers suffering economic problems are located in inland regions. Furthermore, opportunities for achieving work within country towns have declined because of the removal of government-based services (as part of rationalization) (Lawrence and Williams, 1990; Stone, 1992). What remains to be done is to examine which, if any, opportunities are being provided to those farmers and farm members who are under stress as a result of global restructuring. Pluriactivity may be an excellent farm-based option to structural adjustment, but opportunities are likely to remain limited so long as regional economies are not provided with stimuli to attract industry.

Just as there is evidence of overwhelming farmer commitment to the local town and its future (Kidman, 1991), there is also evidence that the deepening recession is responsible for increasing industry closures and economic distress in rural economies. In this sense the wishes of farm family members to take off-farm work are undermined by economic realities of lack of investment dollars. Of course,

when development does occur it is likely that it will be on terms of finance capital rather than of local need (see Share et al., 1991).

One outcome of rural restructuring is further pressure on the environment as farmers seek to counteract falling commodity prices by reducing inputs, working the land harder, and reducing expenditure on conservation works. While this may allow farmers to reduce their personal stress over farm income, many are knowingly running down farm resources (usually perceived as a short term option) to remain in farming (Lawrence, Share and Campbell, 1992).

Much now needs to be understood about resource-use behavior in times of economic stress. What can be stated is that the Australian agricultural environment is under severe pressure as farms seek to employ past (and new) techniques aimed at boosting production. Financial constraints prevent farmers from spending money on needed works to redress soil erosion, while overstocking and overcropping are a consequence of the need to sustain income levels--particularly as a loan repayment strategy (Lawrence and Vanclay, 1992).

The final option for producers is to leave agriculture. While structural adjustment has been a general regime for nonviable farmers and has proceeded reasonably smoothly (in Australia) from the 1960s, the stress farmers face leading up to and during the transition out of farming has yet to be fully studied. There are some estimates that the number of farms in Australia will have dropped from 174,000 in the early 1980s to about 70,000 early next century (Lawrence, 1987). If this occurs there is likely to be quite significant social disruption in rural areas. Yet, as stated earlier, in an era distinguished by reduced levels of government involvement in the rural economy, there is likely to be little support offered to those leaving agriculture. While, in Australia, there has been a quite significant increase in the number of rural counselors, it appears that many assume the role of financial counselors. Many of the growing social problems remain hidden from view and there is a certain 'denial' of the personal and family stresses which are occurring as a direct result of the non-viability of family-farm agriculture (see Bryant, 1991,1992).

Regional Change

It has been argued by European and some US writers that a focus upon global networks and upon the structural aspects of agricultural production has tended to reduce the importance of 'the rural'. Some regions--for reasons of natural resource endowments, local policies, labor availability and skill or market proximity--have managed to attract capital and to develop while others--particularly those where agriculture is the exclusive generator of wealth--have faced pressures for contraction. It is possible to point to regions within Bavaria, Colorado, Northeast England, Ireland and Tuscany as new productive areas which have attracted population and capital, as well as to those which have become economic backwaters (Marsden, Lowe and Whatmore, 1990). There is argument that production flexibility--something accompanying the move to niche markets--will advantage rural regions (Urry, 1984). This is because, through the use of new technologies and production regimes, manufacturing and service industries do not have to be large units. And the smaller the unit the more likely it is to be adaptable. In Urry's words, capital is becoming 'indifferent' to where it is located; something which provides opportunities for rural regions to take advantage of economic developments formerly--and usually exclusively--obtained by cities.

As rural areas become sites of consumption (in regard to leisure, tourism and recreation),

rather than, as in the past, sites of production (i.e. agriculture), it is likely that new opportunities for economic development will arise. The rural will be a site for the social production of meanings (Marsden et al., 1990) where city-based individuals come to appreciate, as a cultural asset, the 'space' provided by the countryside. While there will be varied and competing meanings, this is indicative of the potential politicization of the rural: An obvious example is the degree to which urban dwellers demand (and obtain) conservation works and 'clean food' rather than leaving agricultural production and resource use in the hands of farmers and agribusiness interests. If rural society was once a distinctive entity seen as different from (that is, usually inferior to) that of the city, in the post war period the spatial division between rural and urban has become blurred (Mormont, 1990). While 'space' will continue to provide important insights into the development and reproduction of social relations (when 'localism' may become a key term in understanding local responses to global changes), the 'rural' will not be a self-evident category but a term used by different groups in different combinations to attract different forms of economic development. For Mormont, farmers may use 'natural food' labels to obtain 'value-added' benefits, environmentalists might seek to shift agricultural policy to protect endangered species, tourist operators might appeal to visitors to experience the 'real' countryside, and so forth. The term 'rural' will slide between those wishing to achieve some economic, social or political outcome. It may become very trendy to live in a 'rural' village or to own a small 'property' in the bush--something now possible due to communications technology and guided by lifestyle preference. Furthermore, space becomes attractive to those whose worklife occurs in urban settings (Mormont, 1990). New uses for rural space by new groups of users will ensure that conflicts arise. In some instances, farmers may find they have new allies in their attempts to remain in farming. Altered affiliations are possible. Their effect might be to redefine farming as 'land management' or to promote the countryside as the logical location for new industries. Whether the rural is viewed as something to be exploited, or as something to be preserved and nurtured, will be based largely on the collective assets of those making decisions about rural resource use. There is a specific opportunity for local coalitions of farmers, conservationists, professionals and so forth to oppose particular global trends and to foster others. According to Lowe, Marsden and Munton (1990:6):

> The balance and combinations of use and exchange values on land, homes and recreational space in the countryside is in a state of continual flux as different fractions of capital seek to exploit rural space, open up new markets and thereby produce new systems of exchange. [State policies of] deregulation [and]... privatization ... often lead to acute conflicts between, for instance, the protection of publicly-regulated use values and the attempted imposition of productivity-oriented exchange values. For many groups living in urban and rural areas, parts of the countryside thus represent pockets of space for the public consumption of use values in a world dominated by exchange and commodity values; and for this reason the retention of such use values may be vigorously defended.

The implications of these changes for rural regions of Australia are many. First, 'rural' will be a category employed by groups other than farmers and with meanings broader than agriculture. Farmers are likely to find themselves defending their version of what constitutes 'rural' and what are legitimate and desirable activities within that space against those with new definitions and with new priorities. Conflicts may arise which will not necessarily enforce current patterns of land use and production.

Second, with the possible growth of more flexible production not tied to coastal or other areas of high population, rural regions may attract new groups of people whose training and forms of employment will stimulate economic growth. They may help to 'shape' social space according to their (usually gentrified) views of what constitutes modern life and actively defend their definitions against others. They may represent at the local level the articulate forces which can oppose inappropriate developments which seek to exploit unskilled labor or cause environmental havoc. That is, they may encourage certain forms of development while opposing others. This is certainly evident in the growth of the alternative lifestyle or multiple occupancy movement in Australia (Munro-Clarke, 1986; Metcalf and Vanclay, 1987).

Third, Massey (1984) argues that capital movement shapes regions by utilizing and manipulating spatial differences to capture higher levels of profit. Changing circumstances in rural areas due to decreased farm viability result in the establishment of a supply of labor in non-metropolitan regions, and the increased potential for the exploitation of that labor by what might, in other language, be construed as 'growth' and 'development'. According to Massey, this results in the 'spatial division of labor'.

Although the changing nature of regions will have definite impacts on Australian rural society, there are many uncertainties as to the full extent of these impacts. It is not altogether certain that the changing nature of regions will be as dramatic in Australia, with its vast land mass and relatively small population, as it will be in more densely populated nations of Europe and North America. Nevertheless, areas surrounding major centers of population and regions noted for their natural beauty already experience pressure to conform to urban demands, and rural communities in those regions have responded to the potential created by that demand in the form of altered forms of production. It is unlikely, however, that the vast bulk of Australian agricultural areas--much of which are not close to centers of population and not particularly aesthetically or otherwise attractive in terms of other demands that may be placed on these regions--will be significantly affected by the changing concept of region.

There are also other concerns about the validity of the claims about the impact of the changing role of regions. If new industries do emerge, would farmers be capable of combining their usually less-viable on-farm activities with new work opportunities? Marginal farmers find themselves in a situation of 'agricultural involution' (Geertz, 1963), in which they cannot afford the capital outlay to invest in alternative forms of production, and where they have minimized their cash outlays by retrenching on-farm labor and adopting low-input agricultural systems which have low returns. This survival strategy locks them into a situation which they cannot change and which ultimately leads to decreasing equity. By reducing farm labor, the workload of the owner-operators increases to fill all their available time. Off-farm work by the farmer inevitably means sacrificing production on the farm. Marginal farmers are also unlikely to have the skills that provide them with the potential to find off-farm work, or to adapt their farm to sites of pluriactivity. Changes in agricultural production and non-agricultural on-farm production are more likely to be undertaken by farmers in the higher socio-economic categories.

The final concern is that in a 'disorganized' de-regulated post-fordist economic system, it may be difficult to establish what are realistic and beneficial local opportunities and what are attempts by the metropole, driven by capitalist pressures, to 'dump' inappropriate and/or envi-

ronmentally harmful industry in rural areas in order to relieve urban political pressure.

Conclusion

Global economic change is disadvantaging certain sections of Australian agriculture. It is essential to understand the nature global developments and their likely impacts in any assessment of the opportunities for family farm survival and/or growth in Australia. There will continue to be a substitution of capital for labor in agriculture, the growth of agribusiness, greater farmer involvement with agribusiness, and pressure on farm units to adjust to a regime of decreasing commodity prices. Farmers will have some opportunities to expand their activities--so long as they link with and conform to the production needs of corporate capital. One of the main effects of the changes now occurring will be further 'adjustment'. Some farmers will have the chance to supplement farm income with off-farm work. But in the context of reduced commitment to regional policy on the part of the state, only certain farmers and regions are expected to benefit. Farmer stress will quite possibly increase over the next decade, exacerbating already existing social and personal problems among farm family members.

Niche marketing will increase but, again, it would seem that TNCs rather than growers and their organizations will exploit these opportunities. With the state largely unwilling to intervene to support agriculture and inland rural communities, the fate of people living in rural areas will become increasingly dependent on private investment decisions. It is unlikely in the context of declining business in rural towns that individuals and companies will readily invest in smaller towns. The move to a post-fordist or 'neo-conservative society' will quite probably create greater levels of social inequality in rural regions at the same time as it increases pressure on the environment.

Just as it would seem that the prognosis for the physical environment is bleak, so too the prognosis for the human environment. The outcomes for rural people living in an era of post-fordist state policies and economic development arising from supposed free market forces--while admittedly difficult to predict--is likely to be poor.

Notes

1. This is a revised version of a paper presented at the 8th World Congress for Rural Sociology, International Rural Sociology Association, Pennsylvania State University, 11-16 August, 1992. Parts of this paper have also appeared in:

Gray, I. and G. Lawrence (1992) 'The Impact of Restructuring within Land-Based Production Systems: Sociological Perspectives on farm-family stress', Keynote Paper delivered at the Inaugural Joint Conference of the New Zealand Geographical Society and the Institute of Australian Geographers, held at the University of Auckland, January, (to be published in the proceedings).

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Resumen

Consecuencias Ambientales y Sociales de la Reestructuración Económica en la Agricultura Australiana

La naturaleza cambiante de la agricultura australiana es tal que las fincas corporativas se están volviendo comunes. Las granjas familiares están desapareciendo y las que quedan están perdiendo su autonomía debido al control que ejercen las corporaciones sobre las redes de distribución de los productos, por el aumento significativo de cultivos contratados y por los nuevos avances en biotecnología. Estos cambios en la agricultura tienen un impacto ambiental considerable y es necesario que sean considerados en el nivel político a fin de evitar la propagación de la degradación ambiental. Aún más, estos cambios tienen enormes consecuencias sociales, con amplios efectos no sólo en la naturaleza de la actividad agrícola, sino también en la naturaleza de los asentamientos comunitarios en las áreas rurales de Australia.

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