From the Editors

This is the fifth issue of the International Journal of Sociology of Agriculture and Food. It marks the continuation and development of the activities of the Sociology of Agriculture and Food Research Group of the International Sociological Association, and the establishment of the new editorial team : Alberto Arce (Wageningen, The Netherlands), Terry Marsden (Cardiff, Wales, U.K), and Manuel Belo Moreira (Lisbon, Portugal).
The issue represents some examples of current international work in progress.

Since the first issue of the journal in 1991, which represented the growth of theoretical and empirical activity in the field of the sociology of agriculture and food, and the redefinition of traditional concerns with the agrarian question to those associated with broader questions of food production and consumption, we have witnessed a significant flowering of diverse approaches. Interestingly, this is beginning to transpose both disciplinary boundaries and former intellectual traditions in rural sociology, such as those developed in Europe, Latin America and the United States respectively. These contemporary trends are providing a fertile arena for rural scholars and they are linking rural research creatively with other branches of social science. Indeed, new partial connections are being made between , for instance, economic and cultural change, identity and circulation of commodities. The papers in this issue represent this trend.

From this perspective the intellectual project of the journal becomes even more significant in providing a platform for nurturing and developing critical and imaginative approaches to the increasing complexity and uncertainty of food and agriculture through to the next millenium. The journal holds the aim of facilitating the communication of fresh and challenging ideas, approaches and debates out of which research practices will emanate among the open community of scholars in the field. As editors , we would therefore welcome quality papers, research proposals and research notes for further debate. We are aiming to keep both English and Spanish as the main languages of the journal.

We particularly encourage new and recent entrants to the field to contribute to the journal. All papers, proposals and research notes should be sent in the first instance, in hard copy and diskette to Alberto Arce at Wageningen.

As editors we are looking forward to contributions to your international journal.

Sustainable Development and Agriculture in the Third World

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1 Introduction***

In development studies, much attention has always been focused on agriculture for its strategic importance in determining and driving the dynamics of the development process. It is very often considered as an "indicator" of the development process, through the observation of the trends in its sectoral contribution to GNP and in the composition of the labor force. In general, it is acknowledged in the traditional approaches to development that there is a direct correlation between the development process of a growing economy and the decline of the primary sector. Also, during the process of growth, the differences between the traditional and pre-capitalist agricultural sector and the modern and capitalistic industrial sector tend to disappear, and the primary sector is progressively integrated in the system of capitalistic accumulation.

The birth of the development era is often identified with a specific date, January 20, 1949, when President Harry Truman gave his speech to open his mandate (Sachs, 1992a; Esteva, 1992). It was the first time that certain regions of the southern hemisphere of the world were defined as "underdeveloped" and, as a consequence, two different worlds were compared, from then on defined as the First World and Third World: one developed and able to lead the world economic system, the other characterized by a condition of underdevelopment, the Second being centrally planned economies.

Even if the concept of development is recurrent in the literature, as in the case of the "classic" authors or the theorists of dualism who became popular in those years, the date mentioned is particularly significant because it coincides with the decline of colonial exploitation and with the creation of a strategic process which defined the relationship between rich (developed) and poor (developing) countries. This process has been sustained by many factors: the diffusion of scientific and technological innovations which leads to a renewed trust in the possibilities of transferring modern techniques; the economic and political supremacy of the United States

and the Soviet Union after World War II; the liberalization of trade and the rise of a sort of "one world market", maintained by fast spread of the transnational corporations; finally, the increasing importance on the world scene of the international agencies and supranational institutions in decision making relating to the new world order (Escobar, 1988).

The requirement for creating a complete theoretical body for development studies is a consequence of two main concerns: the need for escaping from the omnivorous power of traditional economic theory (monoeconomics) and the acknowledgment of the benefits arising from an open economic system for the countries involved (mutual benefits) (Hirschman, 1981). The first statement refers to the consideration of the large differences among developed and developing economies, and therefore economic science cannot be treated as a "set" of a few universal principles though extremely powerful, by the same standard as physical or biological sciences. The second point is related to one of these universal principles accepted by the theorists of development economics, the assumption that the economic relations among countries can be regulated in such a way to benefit all the countries involved, either developed or developing.

In the early stages of the theories of development, which came to the peak of their popularity in the late 60's, the most striking aspect is the overlapping of the theories of growth and development (Escobar, 1988). As a consequence of the world economic crisis, brought about by the two world wars, the main preoccupation faced in the new economic agenda was to overcome such crises, through the acceleration of the process of growth and the modernization of the most dynamic sectors. The key elements of this pattern, especially regarding Third World countries, were twofold: a strong program of industrialization on one side, and the support of the cycle of capital, based on the direct relationship between savings and investments on the other (Lewis, 1954)[0].

If, during the last decades, development economics in its traditional meaning reached the top of its popularity, today many scholars tend to underline the unhealthy condition of this science, or even a complete crisis (Hettne, 1990; Manzo, 1991; Esteva, 1992; Sachs, 1992a). What exactly is discussed about the traditional approach to economic development? Some elements

can be pointed out: an increase in the levels of poverty and unemployment, despite increasing production, has been observed in many developing countries[1]; the association of modernization with ecological problems (deforestation, desertification); the impossibility to maintain the same level of consumption as in the First World; and finally the "erosion of the myth that development can create a just and humane society" (Banuri, 1987:8). Besides these, it seems that the overlapping of the concepts of development and westernization has now been questioned, and at the same time new aspects have been taken into serious consideration. These include cultural differences among countries and peoples, possible forms of local and regional endogenous development and the balance between conservation and exploitation of natural resources. In conclusion, there are new theoretical forces tending to reject the concept of forced modernization as a synonym of the development process based on an imitation approach followed by the "backward" countries in order to reach an "advanced" country status. Meanwhile, a search for new approaches which could give a renewed meaning and strength the local social forces is underway.

The acceptance of the limits of the past approaches to development has led to a rethinking of the criteria with which we face the analysis of the Third World. Such rethinking, particularly stimulated by the recent "deconstruction" approach to the concept of development, produced, within the traditional approaches, new theoretical elements, some of them apparently successful, as in the case of Sustainable Development (SD). Is this pattern a "new" feasible one? Or is it just "a new label on old bottles" (Nogueira and Surkin, 1992)?

This paper focuses in some detail on the ability of the concept of SD to suggest a different approch to the problems of development. Our main objective in this effort is therefore of seeing to what extent SD can be considered as the new paradigm of development, providing "the answer" to the many questions that arise from the crisis of the traditional approach. Section 2 highlights the main outcomes of the process of modernization in agriculture, after a brief presentation of the traditional functions of the primary sector in the strategy of development. Section 3 focuses on the supposed crisis of Developmentalism and on the main critiques of the deconstuction approach and presents the concept of SD

in its wide meanings. Section 4 refers to agriculture as a "case study" to test different definitions of SD. In our view, this set of definitions identifies different ways of conceiving "sustainable agriculture".

2 The process of Modernization in Third World countries.

2.1 Development and Modernization.

Different definitions and interpretations have been given to the term "modernization", either with a positive or negative connotation and with a progressive or conservative meaning; in short it has been absorbed by different theories and ideologies, thanks to its lack of a rigid form[2].

In a strictly economic sphere, the definition of the concept of modernization can be related to the early development studies. Such studies led to models that were based on the following two key elements: (1) the development process can be divided into separate stages that show the actual level reached by each single country and (2) development is an endogenous, spontaneous and irreversible process, which each society has to face, but it requires structural differentiation and functional specialization. Given these as the basis of modernization, the concept has endured over time by a continuous process of enlargement, which has made it more and more difficult to define and to be enclosed in one single theory.

As a reaction to the end of World War II, a wave of optimism invaded the entire world, and the concept of development was associated with economic growth, which in turn needed planning, public action, in a word what Hettne (1990) called an "engineering" effort. Research was highly focused on structural analysis, both from a micro point of view - in relation to the way markets and other institutions work - and from a macro point of view, in the study of the correlated long run processes that go along with growth itself (Syrquin, 1988). As far as the macro aspects were concerned, structural modifications described by variables like the capital accumulation rate, the sectoral composition of the economy, the population growth and the geographic localization of economic activities, were specifically investigated. The processes on which greater attention was paid were industrialization, urbanization and the transformation of the agricul-

tural sector. Such a planning component, apparently vital for the regulation of the economy, is based on an "evolutionist" concept of development: the condition of underdevelopment is nothing more than a stage of the evolutionist path of a country. Besides this, another key element supporting the use of planning, and, indirectly, the overlapping of the concepts of growth and development, was the demand for modernization coming from the Third World countries soon after World War II and directed to the international agencies and the industrial countries. This demand was mainly aimed to stimulate the intervention of those actors in the problems of internal development and to sustain the need for international cooperation, following the principles of "One World".

Neo-Liberalism and other theories related to the Neo-Classical tradition that have marked the last decade have extended the concept of modernization to trade models and to the economic interactions between developed and developing countries. These commercial models, based on the theory of free trade, have tended to draw new economic world maps, following the principles of the globalization of markets and the concept of a "One World System" that drives economic exchanges among countries. To what extent can these principles be considered part of the modernist paradigm? An easily identifiable element is the view, taken for granted, of the leading role of industrialized western countries in the management of this world system. The globalization of markets implies an increasing integration of Third World economies in the capitalist mode of production, but also an asymmetric position of poor economies in comparison with rich ones within this system, arising from the strict application of the principle of comparative advantage (Lappè and Collins, 1986). Moreover, the economic, social and cultural systems of the dominant West is offered once again as the model to be followed, therefore annihilating the existing differentiation. Implicit in this is the possibility of exporting development models. The global economic system, the scientific process which ensures technological transfer and promotion of development, and the internationalization of commercial relations, are modernization instruments that guarantee access to growth and development (Sachs, 1992b; Sbert, 1992).

In traditional Marxist analysis, the main contributions to theories of develop-

ment come from the school of dependency and the theorists of underdevelopment. The key elements in these approaches can be summarized as follows[3]: first, the consideration of underdevelopment not as a natural stage of the development path but rather as a condition created by international relations; second, the assumption that the relations themselves between developed and developing countries, as they have been structured, support the conditions for the underdevelopment of the Third World. Now, such considerations have the unquestionable characteristic of containing some anti-modernist elements, since they try, at least, to free the discourse of development from the tight logic of the imitative models (Manzo, 1991). Notwithstanding this effort, the analysis of the dependency school, based on the relationships between Center and Periphery, seems to fall into the same dualistic opposition as the one between "modern" and "traditional": the Periphery is functional to the existence of the Center, and the latter is, after all, the model to be followed. In other words, these approaches never discuss the criteria of definition of the categories Center/Periphery, Modern/Traditional, but just the mechanisms for determining the relationships among countries.

Why then do scholars speak of a possible crisis of the modernization paradigm? First of all, notwithstanding the apparent globalization of the markets and the celebrated "one world system", the world economy seems to be moving toward a growing polarization of its activities, and the gap between North and South is growing, with an increasing marginalization of the depressed areas (de Bernis, 1991; Emmerij, 1989).

Beyond this intuitive observation, a very interesting analytical element comes to light from the consideration that the crisis that scholars have tried to focus on, is not global, as the dependency school suggests through its theory of the circulation of capital, but rather it appears with different causes and different symptoms in different geographic areas. On one side, the types of development put forward by the modernization paradigm seem to fail, and on the other, the notion of an evolutionary development process makes little sense. If the industrialized West has always been considered as "the model to be followed", from the 80's onwards the model itself grew weaker, threatened by the irrational utilization of resources, by problems of pollu-

tion and degradation, and by the economic and social policies implemented. All this leads to the idea that it is extremely difficult to identify a starting point and an ending point in the path to development. Along with the crises of the North, nowadays other aspects must be reconsidered: the breakdown of the socialist block, which by definition was seen as "the other model", and the countless problems of Third World countries, whose solutions seem much more urgent since they are strictly connected with the subsistence economies and which are partly the result of the development process (Hettne, 1990).

2.2 Modernization in Agriculture.

In the mainstream of development economics, agriculture has always played a secondary role, since it is totally functional to the birth and the growth of a non-rural economic system. Traditionally defined as pre-capitalist and backward in dualistic development models, agriculture consequently ends up being submissive to the sector considered to be capitalist and modern, i.e. industry. With the birth and success of development economics, the contribution of the primary sector to development does not actually change, though more attention is paid to the exchange among economic activities. The approach to the agricultural sector deriving from developmentalism is based on the empirical consideration that

"the declining importance of agriculture is uniform and pervasive, a tendency obviously driven by powerful forces inherent in the development process, whether in socialist or capitalist countries, Asian, Latin American, or African, currently developed or still poor" (Timmer, 1990:47).

In spite of this apparently inevitable decline, the sectoral growth of agriculture is acknowledged as a necessary element, though not sufficient, of the wider development strategy. Briefly, the agricultural sector is expected to play five main roles in a strategy of development (as it is traditionally understood)[4]: fulfillment of food demand; release of labor surplus to be employed in other sectors; enlargement of the market for industrial production; increase private savings; and the inflow of foreign currency.

With the accomplishment of these

objectives, agriculture passes through a number of stages that define, according to the traditional approaches, the transformation of the primary sector in the development process (Timmer, 1990). These stages are characterized by the different ways resources are transferred from agriculture to other activities, and by the consequent integration of the "backward sector" into the mode of capitalist production. In other words, the modernization of the agricultural sector occurs according to two main actions: on one hand the regulation of the flow of resources out of the sector and the rationalization of the resources left within it; and on the other hand, the creation of a series of linkages among rural and urban economies that fill the gap between the two systems.

During the 70's and 80's the modernist approach to agricultural development evolved along new lines and was often substantially criticized. Generally speaking, the theoretical contributions of those years have been focused especially on the micro aspects of social and economic development, and as a consequence show little interest in macro approaches. Examples of this change in studies can be found in the Rural Integrated Development Programs and in the Basic Needs approach. In the second half of the 80's, focus shifted once again back to the relationship between rural development and economic growth, and to macroeconomic reforms as the main form of intervention for the development of Third World countries. This can be observed in the stabilization programs highly recommended by the World Bank and accepted by many developing countries with the structural adjustment plans (Staatz and Eicher, 1990).

Although the developmentalist model underlines the importance of the agricultural sector as a part of the general economic system, stressing the role of intersectoral relationships, the concept of agriculture as a "reserve of resources" still persists, and after all, its subordination to the process of industrialization has not changed. This submission is shown through a constant structural adjustment of the primary sector to the functioning of the rest of the economy (Hoggart, 1992). Hence, the basic pivot of modernization policies is still the dynamic relationship between agriculture and the rest of the economy, so as to focus on the "optimal growth" strategy (Mellor, 1990). This relationship can be examined at three levels:

technological, institutional, and international. These represent the three strategic variables upon which the process of modernization in agriculture stands, and, together with it - and thanks to this process itself - the possibility to fulfill the roles expected of the primary sector.

Technological change has been one of the main points of the theoretical and empirical analysis of growth in Western countries. This is why technology has become the most stressed variable in studies on the Third World, especially in the so called "induced innovation models" (Ruttan, 1990). These models always seem to rely on the assumption that the dynamic process which happened in the West has gone through technological progress, and therefore they suggest the same kind of path is necessary for developing countries. The debate on the possibility of a process of imitation by adoption of the most efficient technology and on the concept of "appropriate technology" very well fits the case of agriculture in developing countries, where there seems to be a constant trade-off between modernization and the destruction of local systems in technological choices. If even today the adoption of "appropriate technology" is one of the most claimed objectives of development, this should suggest how "inappropriate" the transfer of technology from North to South has been in the recent past (Long and Oleson, 1980).

The second aspect to be mentioned is the role of institutions, and specifically of the State. The key to this debate is the role of government as a promoter of agricultural development and also as an "interpreter" of rural population needs, since the rural population represents the weakest group within the social components of many developing and developed countries. It has been underlined how the theorization of the State as the central institution for a development orientation is one of the strongest areas of debate within the alternative approaches. In spite of this, the theoretical "strength" of such a concept as the State, and also the relative success of some cases of developmentalist States (as in South-East Asia), make the "deconstruction" of this point particularly difficult. Somehow, the problems connected to the idea of a developmentalist state have more of an indirect nature than a direct one, related to the path chosen, the investments financed and the changes supported, rather than to the intervention it-

self (Rao, 1989).

Finally, the third variable is the network of connections initiated with the opening of international relationships. Even in this case, the progressive integration of agricultural activity in the world economy can have a strong impact on the social and economic organization of local rural systems. One example often reported in the literature (Barkin et al., 1990; Onimode, 1992) is the constant dichotomy between export orientation and self-reliance. The agricultural export performance of most developing countries tends to rest with one or a few crops, with little value added activity. Moreover, the export crops, mostly cash crops, are not complementary with the food crops, but rather tend to be competitive for the availability of productive factors, especially land and labor. As for labor, the shift from subsistence agricultural systems to export oriented ones has also had repercussions on the rural social system, especially tied to the gender division of labor. Women, in fact, are traditionally responsible for the activities connected to subsistence farming, but excluded from the control of agriculture when this becomes a monetarized activity.

In spite of these considerations, what can be observed as the probable consequence of the rigid application of the principle of comparative advantage will be the increasing specialization of Third World countries in trade with Western countries based on products which provide them with foreign currency. The main result of this strategy has been the perpetuation of a strong dependency on the rich countries, at least for food availability[5]. In this constant trade off between integration and self-reliance, technology and the role of the state are again strategic variables in shaping feasible development patterns.

3 Crisis of Development and New Theoretical Patterns.

3.1 Rethinking Development.

The acknowledgment of a state of crisis of the Eurocentric development models has been strongly supported by the contemporary rise of studies that proposed to be an alternative to the modernization paradigm. Such studies offer an easily identifiable different perception of the cultural and economic systems of Third World countries, and have focused on the analyti-

cal effort for escaping the direct and indirect dominance of the leading models. Two different levels of this process of rethinking development can be identified. The first operates within the discourse of development and can be seen as the evolution of the traditional theories. It is based on a few crucial elements which define the dimensions of a different approach: orientation toward the basic needs, endogeneity of the process of growth, self-reliance, delinking and rational utilization of natural resources (Amin, 1990a, 1990b; Hettne, 1990). These elements, though not totally unrelated to the more traditional approaches, are especially emphasized by theorists of "another development", even if with a different stress and differentiated aims according to their specific interests.

The second tends to place itself completely out of the developmentalist approach, very often rejecting the concept of development itself as a Western-constructed discourse (Escobar, 1992a). This process of deconstruction, though not alien from exaggerations and extremes, offers very interesting reflections and new perspectives for the rethinking of the theories of development. The fragmentation of the concept of development is spreading not only at a theoretical level, with the identification of differentiated causes and symptoms of backwardness, but also - and especially - through the definitive decline of the typical unity of the developmentalist discourse, and the reinterpretation of concepts like "Third World", "progress", "underdevelopment", and so on. This double action of deconstruction of the economic thought is mainly the result of the dissatisfaction of a number of scholars toward the traditional approaches, which have very often labelled all that is not exactly classifiable into the category of "Western-like development" as "underdeveloped" or "backward". The logical path generally followed is extremely clear in the words of Sachs (1992a:4):

"It is impossible to talk about development without referring to concepts such as poverty, production, the notion of state, or equality. These concepts first rose to prominence during modern Western history, and only then have they been projected on the rest of the world. Each of them crystallizes a set of tacit assumptions which reinforce the Occidental worldview. Development has so pervasively spread these assumptions that people everywhere have been caught up in a Western perception of reality".

Since its beginning, development became the maintenance of the same conditions with which it was born, through the creation of a network of relations among institutions, economic strategies and political matters which ensures its existence. Two mechanisms are considered crucial for its existence: a) the "professionalization" of development, throughout the generation, diffusion and acknowledgment of a discourse of development and the creation of specific "ad hoc" disciplines (development economics being only one of them); b) the "institutionalization" of development, throughout organizations such as international agencies, non-governmental organizations, and bilateral agreements, which are responsible for the diffusion of development practices.

The overlapping concepts of development, progress and growth are the basis upon which the theories of underdevelopment and modernization are built, whose essential structure is always the dichotomy of two elements: Center and Periphery, industrialized countries and poor regions, First and Third World, modern and backward sectors. Within such dichotomies it is always the first of the two elements which assumes a positive connotation, while the second exists just as the negation of the first, thus representing an "inferior reality" (Manzo, 1991).

A mechanism like the one described above inevitably leads to one result, no matter what theoretical contextualization: The disappearance of cultural and social differentiation and the homogenization to a single dominant model. As Sachs (1992a:4) suggests: "The 'Other' has vanished with development". The "voices of resistance" stress exactly this point, that is, the effort in recovering this diversity which seems to be more and more suffocated by an apparent homogeneity of the social and economic dominant models.

The development discourse, as generally intended, is mainly based on a series of relations built on a few variables like capital, technology and resources. Once those relations are highlighted, a "space" of development is defined, within which concepts like industrialization, planning, green revolution and macropolitics, can be easily located. Such a space is so well defined that it seems almost impossible to even conceive a social reality different from the one shaped by those variables (Escobar, 1992a). The deconstruction process does

not deny the tragic living standards of a large part of the Third World population; it rather tries to underline how the conditions of poverty, backwardness and rurality have been "constructed" as underdevelopment. In other words, their definition of a "problem of underdevelopment" led to the institutionalization of solutions like the industrialization process, international aid and so on.

What is left out of the space defined by capital, technology and resources? According to the supporters of the "deconstruction" view, all those aspects connected to the endogenous and local processes of a country which are considered as part of the Third World are not included in traditional models. These processes, sometimes conscious, but mostly unconscious, are a fragmentation of the reality defined by the categories of development; they bring into light some social categories that are made invisible by the traditional approaches: peasants, women, environmental movements, or simply the actors of the local traditions and cultures. These "new" categories make the counterposition between "modern" and "traditional" become unbearable and obsolete. As Escobar put it:

"the distinction between 'modernity' and 'tradition', one of the major dualisms through which development operates, is showing clearer signs of obsolescence, despite the fact that the current restructuring of the world economy ... seems to imply that capitalist 'modernization' is the only alternative left in the Third World" (Escobar, 1992a:423).

So the emergence of "new" social actors and the proliferation of grassroot movements in Third World countries weaken not only the interpretative effort of developmentalism, but also that of "alternative" theories such as dependency and marginality.

What are the possible outcomes of such a direct deconstruction of the traditional theories of development and of the acknowledgment of a crisis in development economics? Although it does not seem reasonable to talk about "the death of development" (Raffi, 1990), this process of rethinking has the indisputable merit of having stimulated a deep reformulation of the approach to the study of the Third World, opening up the way to new feasible theoretical issues. The conciliation of the mainstream with the "voices of resist-

ance" is very often just apparent, and limited to a process of absorption of the language and the actors, which turns up to be of a lifting more than a real opening to new ideas and needs. A very good example of the last issue is the concept of SD, which includes environmental aspects in the approach to the Third World. Are we really facing a new way of conceiving development, or is it just a formal process, that leads to the appropriation of the discourse of environmentalism, and that celebrates the "happy marriage" between development and environment? In the next paragraph, entirely devoted to these issues, SD is considered to be "the battle ground" between the mainstream and the new approaches to development.

3.2 Sustainable Development: "a New Label on Old Bottles"?

Since the end of the Eighties, in view of the *redevelopment* of both the First and the Third World, the concept of SD has proved to be the new ethos of development (Esteva, 1992) - a role that, as it is shown below, may appear too ambitious, notwithstanding its indisputable merit of having proposed the environmental aspect as an integral part of the development strategy and not merely as a secondary concern of the strategy itself.

As a starting point it should be recognized that, aside from criticism, SD is the most successful idea in terms of environment and development. The reasons for such a success are clearly connected to its conceptual flexibility, which allows it to acquire different meanings and nuances according to the theoretical, political and social context in which from time to time it is inserted. Such flexibility allows an apparent merging of shapes and objectives:

"from the profit-minded industrialist and risk-minimizing subsistence farmer to the equity-seeking social worker, the pollution-concerned or wildlife-loving First Worlder, the growth-maximizing policy maker, the goal-oriented bureaucrat, and therefore, the vote-counting politician" (Lele, 1991:613).

We will attempt to clarify the different positions of SD, from the most significant to the most irrelevant ones: our goal being not that of providing a final definition, but rather that of ascertaining, on the basis of an historical analysis of such a concept, whether one or more (or none?) new theo-

retical bodies are contained in the mist of definitions.

The historical period under analysis runs from the United Nations *Conference on Human Environment*, held in Stockholm in 1972, to the *Earth Summit* of Rio de Janeiro (1992), a time in which SD, though still unconvincing in terms of an attained level of "maturity", has nonetheless gained the central position it currently holds both in the *mainstream* and in alternative approaches.

3.2.1 A Short History.

The 1972 *Conference on Human Environment* is usually considered to be the key event in the recognition of a "global" environmental problem: under the pressure of the acknowledged "global crisis" of the Sixties and Seventies, ecology and environmentalism began, at least in intention, to cross national borders. The Conference however was unable to indicate global solutions: the environmental issues and those related to development were considered separately and the sense of integration and sharing of the problems between North and South was overlooked (Adams, 1990).

In this period, literature was dominated by works of Neo-Malthusian imprint (Ehrlich, 1968; Meadows *et al.*, 1972), based on the principle that the population cannot trespass the availability of resources without facing famine and environmental degradation. Such an approach, strongly criticized because of its lack of reference to distribution problems, appeared rather suspect to the less developed countries. In the proposal of "global" solutions they saw an attempt to avert national resources from national control (Adams, 1990) as well as a possible involvement in problems for which they held themselves only secondarily responsible[6] (Nogueira and Surkin, 1992).

It was at the meeting held in Cocoyoc, Mexico, in October 1974, that the concept of SD was explicitly used for the first time. On that occasion, possibly the birthplace of an "alternative trend" in the theory of economic development (Hettne, 1990), the environmental problem was faced for the first time from the standpoint of the Third World and especially of the poorest countries. The conclusive declaration underlined in fact the uneven resource distribution and the existence of a double bond in the development process, an internal one due to human needs, and an external one

due to resource exploitation.

The official document that gave a wider international resonance to the concept of sustainability, thanks in part to the media propaganda at the time, was certainly the 1980 *World Conservation Strategy* (WCS). Although presented as a first attempt to demonstrate the indivisibility and the compatibility between environment and development, the WCS involves development only marginally, focusing its attention on sustainability essentially understood as conservation (IUCN, 1980).

In spite of the unquestionable influence of the WCS on the following studies[7], its micro approach, the accent on the importance of local cultures and technologies, and its technical reference to ecologically "sound" agricultural practices led the *mainstream* to associate the document with localism, underlining its lack of global view[8]. Such criticism was widely accepted by the subsequent and perhaps most influential document in the field of SD: the 1987 *Brundtland Report* (BR). As a product of the *World Commission on Environment and Development*, that report was in fact centered on a decidedly global approach, on multilateralism and inter-dependency among nations, its aim being to fit the environmental problem into a political economy framework[9].

Our Common Future (WCED, 1987) provides the first explicit definition of SD as a kind of development "that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987:43). This definition is essentially based on two concepts: the requirement to satisfy *basic needs* and the existence of some limits in the expansion of economic activity. In such a view, it should be stressed that the limits stated in the BR, are not those imposed by the environment as such, i.e., absolute limits, but are those "imposed by the state of technology and social organization on the environment's ability to meet present and future needs" (WCED, 1987:43).

Thanks to such a definition, the concept of SD undergoes a subtle but important change, being pushed towards the socio-economic context of development in the guise of an efficient *management* of natural resources. Also the WCS proposed a certain form of environmental *management* starting from the (essentially moral) assumption of the maintainance of the ecosystem and subsequently trying to demonstrate that such a behavior was right also

from the economic standpoint. Conversely, the BR inverts such relationships completely and, focusing directly on humanity, discusses the environmental policies required to attain pre-fixed socio-economic goals. One seems to have shifted from the Seventies, the days of the *limits to growth*, to an era of *growth to limits* (W. Sachs 1988, as cited in Escobar, 1992b).

The BR's analysis is exclusively centerd on economic growth and its role in solving the problem of poverty, which is considered the main cause of environmental degradation. A world economics' revitalization in an otherwise ill-defined *ecologically sound* framework is in fact hoped for, aiming at eliminating the plague of poverty and, together with it, its "damaging" effects on the environment. These solutions, which do not explain how the *balancing trick* (Adams, 1990:60) with the environment could be achieved within their context, lie in fact in a "more rapid economic growth in both industrial and developing countries, freer market access to the products of developing countries, lower interest rates, greater technological transfer, and significantly larger capital flows, both concessional and commercial" (WCED, 1987:89).

If the limit of WCS can be detected in its scarce attention to the political and economic forces active behind (un)sustainable development practices (Redclift, 1984, 1987), then the BR seems to be exclusively interested in the effects of environmental degradation on effective and potential growth, neglecting the negative consequences of economic growth on the environment (Adams, 1990; Escobar, 1992b). What was considered a "romantic" view in the WCS, gains in the BR the shape of the most "rational" economism: it is not directly the environment, but economic growth and the hope in its beneficial effects that seem in need of being sustained (Illich, 1989). Thus in the last years a substantial change in behavior towards the environment from a "moral" to an "efficientist" approach has shown up (Batie, 1989).

We would like to conclude this brief history, with a few words on the Earth Summit of Rio de Janeiro held in June 1992. Even in that context, SD has put to a profitable use its many nuances to gain a central position in the North-South debate. In spite of this, the results may be considered deceiving as no new position has been postulated and all the known approaches have failed to give any original contribution to

the debate on the possible role of SD. Moreover, the well-known conflicts among nations - more specifically, North vs. South - which characterized the Rio meeting, seemed to throw for the first time some doubt on the success SD had enjoyed until then: in fact the political consent that had always appeared to accompany and sustain the SD diffusion collapsed, as we will see in the next section.

3.2.2 Sustainable Development: a New Paradigm?

The promoters of SD found themselves facing the dilemma typical of every program of political action and social change: the choice between an incisive and unambiguous position about the goals of the program or the maximization of political consent. In contrast to *ecodevelopment*, which was declared rapidly "out of fashion" as it focused on environment's problems too "radically", SD aimed neatly at the second choice, often sacrificing its precision to a wider popularity (Barbier, 1987).

Entirely different and historically opposed political and social forces found shelter under the ill-defined shadow of SD. On the one hand, the environmentalist movements went back to the concept of SD in the attempt to demonstrate the relevance of their ideas about correct management of natural resources and to combine the "half-spiritual" idea (Sachs, 1992c) of ecology with the rationality of economic theory. On the other hand, international agencies and development theorists saw in SD the long awaited wedding of development and environment. The last World Bank's Development Report (World Bank, 1992), clearly states that the reasons pushing for the compilation of works such as *The Limits to Growth* (Meadows *et al.*, 1972), in which the necessity to put a restraint on economic growth was emphasized, belong by now to the past and that to-day, thanks to the idea of SD, only a "false dichotomy" (World Bank, 1992:25) exists between development and the environment since in fact the two goals are concurrently attainable. Moreover, they are simply defined as "complementary aspects of the same agenda" (World Bank, 1992:25).

According to Buttel (1992), SD represents the success of the "greening" of the institutions assisting development: embodying "opposition" topics, such as the ecological and feminist issues of the 70's,

the 90's *mainstream* appears renewed, at least in its form. To what extent is such an internalization of environmental problems a sign of change or just a variation of language? If both "development" and "sustainability" show definitional difficulties, it is obvious that their joint use can generate an unbelievable proliferation of different meanings. In fig.1, an attempt has been made to sketch how such concepts, according to the different features, can spawn many "forms" of SD.

The first definition suggests that SD is a synonym of *sustaining growth*. Such an accepted meaning, apart from neglecting the well known criticism about the inadequacy of growth as an equivalent to development, appears highly inconsistent (Lele, 1991). In fact, if growth is intended in strictly physical terms, as in the growth of consumption, the hypothesis of its unlimited sustainment collides with the acknowledgment of an existing impassable limit, certainly already reached, in the use of resources (Goodland, 1991; WCED, 1987).

In other instances, the word "sustainable" is often used to underline the relevance of certain categories of economic policy objectives within development programs: in fact if we analyze the recent literature in the field of development, either Neoclassical, Marxist or Radical, and the Environmentalists' programs, we find references to "sustainability", though differently interpreted, everywhere. According to this kind of approach, different priorities are in fact identified: fulfillment of the *basic needs* of the poorest populations, maximization of inter-generational equity, maintenance of resource productivity, safeguard of genetic diversity, respect for different forms of culture, maintenance of social equilibrium, improvement in access to resources, social and institutional justice. As we will see in the concluding section, even if every single approach seems to propose an absolute priority, we believe that the goals acquire a different relevance according to the economic and social contexts to which they are referred and therefore particular attention must be paid to the inter-relationships and reciprocal influences existing among them.

Finally, sustainability is called for as a "successful" feature to the development process: "for economic development to be truly 'sustainable' requires tailoring the design and implementation of projects to the needs and capabilities of people who

are supposed to benefit from them" (Uphoff, 1985, quoted in Barbier, 1987:103). This assertion seems to be a trivial one, in that every development program should obviously be oriented towards its own beneficiaries. Furthermore, it does not clarify at all in what way SD differs from development.

3.2.3 Economic Growth: a Non-Objective of Sustainable Development.

If the uneasiness acknowledged so far in treating development sustainability and its meaning stems from an analysis of the primary sources, it is not surprising that some secondary sources taking the problem into consideration propose it in extremely simplified terms. The 1992 World Bank Development Report does not hesitate to dismiss the problem in few words: "sustainable development is development that lasts" (World Bank, 1992:34)[10]. In fact, after mentioning the "absorption" of non-economic factors such as literacy, life expectancy, etc. in the definition of development, and underlining the risk that environmental degradation can represent to the attainment of these development goals, the World Bank reduces the problem to a matter of efficiency in the natural resources management and to the choice of a "well-chosen" rate of discount to be employed in the cost-benefit analysis[11].

In such an "efficientist" view of the environmental problem, however strongly hoped for in the BR, the main instrumental goal identified by the *mainstream* in order to achieve SD is economic growth. Such a choice however raises some doubts. If on the one hand it is reasonable to believe that growth and environmental safeguards are not necessarily antithetical, on the other hand one could ask why, in the absence of such a correlation, the accent continues to be put on growth as a solution. The answer generally given to such a question lies in the hypothetical relationship existing among growth, poverty and environment; given the "responsibility" assigned by many to poverty in environment degradation (World Bank, 1992), economic growth appears to be considered a solution to the problem of poverty and, consequently, to the ecological question. Such a statement seems to oppose the fact that, at the beginning of the Seventies, the *basic needs* approach was indeed proposed in consequence of the observation that economic

growth alone was unable to solve the problem of poverty. According to several authors, in fact, economic growth should be a "non-objective" for SD, in that it does not necessarily imply environmental sustainability nor the removal of poverty. What on the contrary could be of some relevance is the reversal of the phenomenon: the implementation of policies aimed at solving efficiently the problems of poverty, of unemployment, of environmental degradation, of rural development, could bring as a consequence, especially in the Third World, a GNP increase and a still more hoped for growth of investments. Anyway, "economic growth may be the fallout of sustainable development, but not its prime mover" (Lele, 1991:615)[12].

3.2.4 The "Commoditization" of Nature, or, How "Resistance" Encounters Sustainable Development.

Many heterodox scholars criticize the concept of SD mainly because the model reproposes through the "greening" of economic theories and of the institutions propagating its contents a "green" version of the same paradigm, once again centered on the benefits of capitalism, on the drive/model role of the West and on a managerial approach to the environment. According to Sachs (1989), the only aspects separating *eco-developers* from traditional economists are the direct acknowledgment of environment's limits to production and the need to overtake them. In fact their common character is an "economic worldview that fails to appreciate cultural limits to the predominance of production, cultural limits that reduce the importance of production and, in so doing, also relieve environmental pressure" (Sachs, 1989:18). Following the ideology typical of ecological sciences and system theory, development is essentially proposed as a process of resource management, where a slight reform of "traditional" instruments is considered sufficient to ensure "optimal" results (Adams, 1990), without discussing the concept of development in itself.

Furthermore, the voices of resistance criticize the scarce consideration in which are held the "other" cultures, and the entire group of economic agents only partly or not at all interested in what happens in the market. Once again, as in the days of the Green Revolution, development seems to address the groups prone to be more and

more integrated into the national or international economic system, leaving apart the poorest fringes, up to their definitive disappearance.

According to several scholars (Sachs, 1992a, 1992c; Shiva, 1992), the first and most necessary step toward the realization of the formal reconciliation between development and environment has been the so-called "commodization" of nature. Through its progressive capitalization, nature gets into the economic process as a "production condition", as something that, even if non-capitalistically produced, has to be considered in the same way as any other good subject to value and market laws (O'Connor, 1991). Thus, turned into "environment", "raw material", "natural resources", nature acquires within the traditional economic theory a manageable shape: what is not economically relevant is bound to disappear and ethical values are systematically degraded to technical values, the so-called "externalities"[13].

Such a *desacralization* process (Shiva, 1992) from Mother Nature to Environment has its roots in a modernist and Western approach to science: from a Baconian perspective, the role of humanity can be seen in the control exerted over natural processes. In affirming the universality of such supremacy in the relationship between humanity and nature - typical of the European cultures of the Judeo-Christian tradition as a consequence of the fear instilled by the exogeneity of the "natural" in the human world - the *mainstream* shows the main limits of its action. In fact, although the "sustainability" of local cultures is often present in official documents, all communities pursuing strategies other than that of efficiency in the use of resources are not considered at all or at best are judged implicitly irrelevant.

The above-mentioned scholars' contribution to the discussion is that they consider resources only as far as they are used in the production of goods and in capital accumulation. In this way, are ignored both the relevance of natural processes regenerating resources apart from human activity, and the vast necessity of natural resources of most of the world population, whose needs are not satisfied through the market mechanisms. Such a partial view of nature turns out to be "the reason why ecological destruction and threat to human survival have remained hidden negative externalities of the development process" (Bandyopadhyay and Shiva, 1988:1227).

As often underlined in this article, the relevance of the "voices of resistance" lies in having offered new motives of reflection on the general questions of development. Apart from this indisputable merit, two possible negative aspects can be detected in such approaches, especially if totally antithetical to Western ones: on one side the danger of flowing out into a sort of pro-Third World and anti-West ideological fundamentalism, which could contribute to the worsening of the polarization among world regions, on the other the risk that these forms of opposition crystallize in a sort of "Purism", which is but the expression of an "upside down" cultural élite.

4 Sustainability in Agriculture.

In this final section, an attempt will be made to combine the definitions of SD with different ways of theorizing the role of agriculture in economic development. This is aimed at gaining a further parameter to evaluate the theoretical strength of SD through the use of agriculture as a "case study".

In section 2 we highlighted the main processes of agricultural modernization. If one considers SD as *sustaining growth* (left definition in fig.1), such strategies may fall into the category of sustainability. As previously pointed out, this definition of SD focuses on the effects of an increase of growth as a solution to poverty and, as a consequence, to environmental degradation. Therefore even the transformation of agriculture along the modernization path can be understood as "sustainable".

The traditional analysis of development tends to focus on environmental degradation as a direct consequence of merely exogenous shocks, like demographic pressure, adverse climatic factors, and external debt that leads to an uncontrolled use of the resources. These factors, however important in the determination of the causes of environmental problems, become particularly powerful once they act on a system already damaged by some of the effects of modernization[14].

It is not our intention to romanticize the pre-modern organizational forms, but still it is important to acknowledge that a subsistence system is often a "closed", possibly backward system, but with some very effective mechanisms of control on the environment and on the social relations that

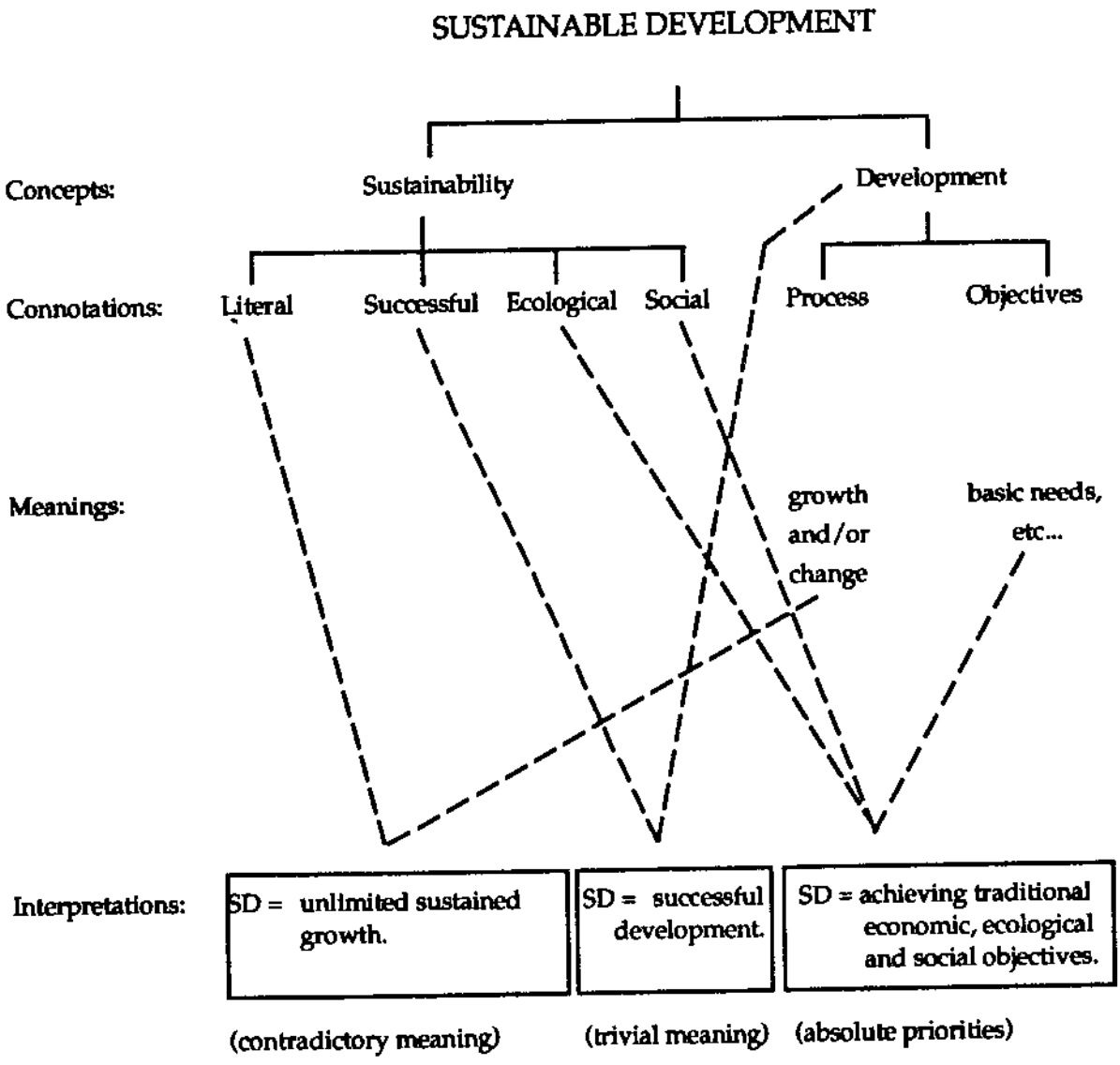

Figure 1 - Sustainable development semantic map (adapted from Lele, 1991).

establish a balanced working of the whole society. The problem often posed by the modernization process is precisely that of the opening of such a system, which loses its internal balance and collapses, if not coherently supported.

What we have discussed up to this point inevitably leads us to reconsider the roles of the agricultural sector in developing countries. In such countries, the traditional function of the primary sector as a resource reserve seems to be perpetuated. Such a function, typical of the modernization perspective, is the main cause of a number of problems, which includes an increasing social and economic polarization between export-oriented agriculture embodied in the global system, and subsistence agriculture, increasingly marginalized and condemned to disappear, however high the human and social cost.

The sustainability of the agricultural sector seems to be posed in a transversal way on three main systems: economic, social and environmental (Barbier, 1987). However, each system relies on different objectives which, although individually relevant, are not always simultaneously attainable. Evident trade-offs exist amongst them: for instance, between the necessity of augmenting agricultural production and the restraint of environmental degradation, between the improvement of the social condition of women and the safeguard of the traditional family values, or between the introduction of new techniques and the conservation of the local culture. For this reason it is difficult, if not impossible, to establish an absolute hierarchy in the priority of objectives (right definition in fig.1). The concurrent presence of so many objectives, that, as we have seen, constitutes the basis for the political success of SD, is thus also the main reason for its limited and controversial attainability.

In conclusion, it seems important to state on one side the multidimensional aspect of development, as a consequence of the interaction among the three systems mentioned before, and on the other the variability of the objectives of development in time and space. In this regard, a particularly interesting example is provided by the Punjab area of India, one of the acknowledged "successful" cases of the Green Revolution. In that region, the positive achievement of short-term objectives, such as the increase of cereal production through the use of genetically selected varieties, was

followed by long-term effects on the social, political and ecological order of the area, the value of which is at the least questionable (Shiva, 1991).

By analyzing the different agro-systems, from local to international ones (Conway and Barbier, 1990), the interactions among the economic, social and environmental systems, and between these and the implied instruments, vary according to the level to which one is referring. In other words, when an attempt is made at defining which role of agriculture in developing countries (but not only in these) is "sustainable", the level of the agricultural system to which one is referring must be indicated. Very often in fact an agriculture "sustainable" at a certain level of the hierarchy can turn "unsustainable" at the next one and vice versa. In this regard, many examples may be recalled. Strongly export-oriented agricultures can be seen as an example of "sustainability" at the international level, but their "unsustainability" at the national and regional level can be a problem in social and economic terms. Cropping techniques of the *slash and burn* type, particularly sustainable if limited to areas characterized by a reduced demographic pressure and adequate fallow intervals between each harvest (which allow the regeneration of soil fertility) become highly harmful when intensified, because of the scarcity of land or the effect of demographic pressure. Furthermore, agricultural systems based on subsistence and self-consumption can be seen as sustainable if single rural systems are considered, but show their limits as soon as one tries to stretch them to a general model, in that, through the reduced supply of food, they tend to put a penalty on poverty, having no direct access to the land.

Therefore, it seems very difficult to identify generic sustainable approaches to agricultural development. They might only be defined by paying attention to the many dimensions of development, but this takes us back to the trivial space of the fig.1 (SD as "successful development"). In other words, the terms "sustainable" and "unsustainable" seem to have here no other particular meaning than "good" and "bad".

5 Concluding remarks.

The main outcome of this paper is that SD, far from being "the new" paradigm, appears to be an extremely ductile and flexible instrument of economic policy. Such properties allow its merely formal absorption into often contrasting approaches of several kinds, and offer the possibility of using it as a *new label on old bottles*.

The way the *mainstream* has dealt with sustainability seems to be nothing more than a make-up operation, leading to an environmentalization of old approaches that gain a renewed success. Such an operation has involved not only the theories, but also the institutions like states, international agencies, political movements. This aspect is very effectively underlined by the theorists of "resistance", whose main merit is that of monitoring the real quality of the mainstream's effort of the mainstream to renovate itself.

On the other hand, the stress on such a partial aspect of development as the environmental issue, leads very often to a form of "deep ecologism" that tends to emphasize only one of the three main systems on which development lays (economic, social, environmental). This attitude is shared by both some of the "voices of resistance", such as the advocates of conservation and *sacralization* of Nature (Bandyopadhyay and Shiva, 1988), and some green movements of the Western countries.

Finally, the definition of SD as "successful development" seems to be redundant and the association of sustainability with the concept of development can only be seen as a way of acknowledging that the policies implemented have not really been "sustainable". If on the one hand SD is no more than a *label*, on the other the real problem, in our opinion, is still represented by the *bottles*, that is, by the way the many developmental issues are faced and confronted.

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Notes

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[1] According to the 1992 World Development Report (World Bank, 1992), GDP growth rates range from 0.5 for the Middle East & North Africa to 7.8 for East Asia & the Pacific.

[2] For a wider discussion of the concept of modernization and its possible uses, see Best and Kellner, 1991.

[3] For a detailed rewiev of the underdevelopment and dependency theories, see Palma, 1978; Kay, 1989; for a critical approach Manzo, 1991.

[4] These main actions are considered by Timmer (1990) to be the takeover of the *functional contribution* of the primary sector to growth, as generally stressed in the dualistic models, and a stress on the *role* of agriculture in the development process

[5] This seems to be the consequence of the implementation of structural adjustment plans strongly supported by international agencies. The agricultural sector is particularly involved because of competition between food crops and cash crops, and

also because the primary sector is a policy-taker in most countries, as in the case of policies of devaluation, and trade liberalization.

[6] The unequal contribution to pollution by developed and developing countries has been one of the main topics of discussion in the twenty years leading to Rio 92.

[7] A typical example is *ecodevelopment*, which owes much to the moral considerations of the WCS. Ecodevelopment is originally defined as "an approach to development aimed at harmonizing social and economic objectives with ecologically sound management, in a spirit of solidarity with future generations; based on the principle of self-reliance, satisfaction of basic needs, a new symbiosis of man and earth; another kind of qualitative growth, not zero growth, not negative growth" (I. Sachs, 1978, quoted in Glaeser, 1984:25).

[8] The perhaps excessive use of moral points of view in support of environmental protection and the misbelief that preservation itself could outflank power structures and social disparities have operated in such a way that the WCS was also defined by the *mainstream* as a romantic, ideological and eventually *naive* strategy.

[9] The BR is part of a series of studies commissioned by the United Nations in the Eighties, having as a common trait an approach of the *one world system* kind. On such an approach are based two reports of the Brandt Commission, *Programme for Survival* and *Common Crisis* as well as the Palme Commission's *Common Security*.

[10] For a detailed rewiev of 1992 World Development Report, see Taylor, 1993.

[11] A contribution to the understanding of how much the international institutions took up the environmental problem is clearly provided by the assertions of L. Summers, the World Bank chief economist, about the opportunity to encourage an increasing displacement of polluting industries towards developing countries. In this regard, Summers offered three reasons in support of a positive answer: 1) since the pollution cost is determined by the lack of earnings due to death and disease, and as the earnings are lower in the poorest countries, such losses turn out to be less important; 2) since the cost of pollution is expected to be augmented in proportion to its increase, the contamination of still clean regions of the world could be considered less injurious; 3) as people attribute a higher value to a clean environment as their revenues increase, if polluting industries move from wealthy to poor countries, the global cost of pollution will fall (The Economist, 1992:7).

[12] Although listed as a "high priority" to achieve sustainability, also population control will be a consequence of such developmental policies, through improved labor incomes and reduced poverty.

[13] An example of neoclassical "rationality" and "internal coherence" is offered by W. Beckerman (1992), a World Bank consultant for the World Development Report 1992 on the environment. Talking about the increase in the atmospheric temperature caused by the accumulation of industrial gases, he rejects any suggestion of a slow down of the industrial production because the cost of such a reduction would be "greater than the cost to Bangladesh of the sea level rise (Bangladesh is seriously in danger of being flooded), it would *obviously* be in everybody's interests to abstain from this drastic action and to compensate Bangladesh *generously* out of the savings that would be made" (p.486, emphasis added).

[14] It is extremely important to underline here that we are using the concept of environment in a very broad sense, not limited to the natural aspects, but including the social and economic relationships involved. We also believe that this is a very meaningful way of approaching the problem of sustainable development.

Sweet and Sour: the Dynamics of Sugar Cane Agriculture

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1 Introduction

This paper examines two different cane sugar industries, those of Barbados and Australia, and considers how and why sugar production has tended to become increasingly problematic in both of these cases. Such tendencies are significant not simply because they threaten the future viability of the industries themselves, but also because attempts to sustain production in situations where industries have become progressively dysfunctional often involves the overexploition of both human and environmental resources. After brief descriptions of the key characteristics of sugar as an agro-industrial commodity and the global sugar economy, the paper focuses first on the Barbadian sugar industry and subsequently on the Australian sugar sector. In both these cases, the discussion attempts to explain why these industries have become increasingly difficult to sustain in recent decades. Several factors may be significant here. Sugar prices have been declining in real terms for some time and within this the global sugar economy has been extremely volatile with prices often fluctuating violently over very short time scales. The central theme of the paper, however, revolves around the ways in which two very different production systems have themselves generated contradictions and barriers to their own reproduction. The final section of the paper considers the significance of this analysis to wider issues such as sustainability and regulation of sugar production at both international and national scales.

2 Sugar and the global sugar economy

Sugar is the most widely produced agricultural commodity in the world. In 1993, global sugar production amounted to 111 million tonnes with a total value in excess of US$28 billion. Just two plants are commercially important sources of sugar: sugar cane which grows in tropical and sub-tropical areas; and sugar beet which is

produced in temperate areas. Accordingly, sugar cane production is generally, but not exclusively, associated with less developed countries, whilst beet production is essentially a feature of the developed countries of Europe and North America. Despite the dissimilarity of production methods, the sugar produced is a uniform product which does not differ significantly in its nature or quality. Thus sugar represents a good example of a major agricultural commodity where the developed and developing worlds are in more or less direct competition with one another (Abbott, 1990:1).

Health concerns and substitution by chemical sweetners and other agro-industrial products such as high fructose corn syrup have served to depress demand for sugar in the North in recent decades. Whilst there is potential for increased consumption in the South, any significant overall growth in consumption in the near future seems at best unlikely (F. O. Licht:1993; Heismann:1993). Indeed, recent patterns of sugar production and consumption indicate a pattern of distinct and persistent overproduction. This appears to be underpinned by a range of factors. On the one hand, the global sugar economy is profoundly distorted by widespread protectionism and support for domestic industries - a feature of which the 'Cairns Group' and particularly the Australian Federal government have been vociferously critical (Miller:1987; Jesson:1991). Sugar production also appears to be highly price insensitive, not least because of the relatively long length of sugar cane production cycles which normally extend to at least four years (see, for example, World Bank, 1986). A key contributory factor to the status quo, however, has been the widespread tendency for Southern countries to either expand existing production or to establish new sugar industries during recent decades. The South now accounts for well over 50 per cent of global sugar production (FAO, 1987:7; Abbott:1990). This expansion of sugar production in the South is somewhat difficult to explain rationally given the wide range of economic, social and environmental problems which are commonly associated with cane sugar production (Coote:1987). In practice, several factors appear to underpin the trend. These include: objectives of self-sufficiency in sugar production; inaccurate predictions of future demand; the ready availability of capital from intergovernmental lending

agencies; and inappropriate responses to short-lived hikes in the sugar price (FAO, 1987:4).

Throughout its history the global sugar economy has always been typified by boom bust cycles engendered by extreme price volatility. Between 1974 and 1985 the spot sugar price ranged between $0.06 per kilogram and $2.60 per kilogram[1] (Borrell and Duncan, 1992:172). To some extent, the volatility of the market has tended to overshadow an equally significant trend for prices to fall in real terms. As Mintz (1985:158) suggests "the steady and cumulative decline in the relative price of sugars is clear enough". This decline is significant because in practice it has defined a progressively stressful context within which producers have had to operate.

Both the volatility of market and the trend for prices to fall in real terms can be explained, in part at least, by the nature of the sugar economy itself. Although global sugar production has risen in absolute terms, the percentage of total sugar production traded internationally has been falling for some time and over 70per cent of the world's sugar is now consumed in the countries where it is produced (Abbott:1990; ISO:1994). A high proportion of the remainder is exported under various forms of bi-lateral agreements. Around 25per cent of the international trade occurs within special agreements. The USA, for example, has various special trading arrangements, particularly in Central America, the Caribbean and the Philippines. The rationale for these has often been as much strategic as economic. European Union policy has also had a highly significant effect on the global sugar economy. On the one hand, the EU is now one of the world's largest producers and exporters of sugar. Over and above this, the EU also has formal trading arrangements with a large number of Southern cane producing countries. These arrangements are formalised under the Sugar Protocol of the Lomé Convention first signed in 1975. The objectives of the convention involved granting some protection to 64 African, Caribbean and Pacific (ACP) countries who then had trading arrangements with members of the European Community. The Protocol incorporated those colonies and former colonies which had traditionally exported sugar to Britain under the Commonwealth Sugar Agreement (CSA). Australia was the only CSA signatory which was subsequently

excluded from the Protocol. Under the terms of the Protocol, the EEC agreed to import 1.3m tonnes of raw sugar from the ACP countries. Each sugar producing ACP country was allocated a quota based on historical trading patterns. Barbados, for example, was granted a quota of 54,000 tonnes of sugar. These quotas receive a guaranteed preferential price related to the 'A' quota price paid to European beet producers[2]. Since 1975, European intervention prices have normally been higher than the world market price for sugar, and at a superficial level, at least, the arrangement appears to benefit ACP countries (see figure 1). Although it was a net importer of sugar in 1975, the EC was exporting over 5m tonnes onto the world market by 1981 (Coote, 1987:100). Accordingly, all imports from ACP countries have been effectively re-exported onto the world market since the late 1970s. However, pressures for change in EU agricultural policy seem to indicate that the future of the ACP agreements are at best uncertain.

Given the small size of the residual market for internationally traded sugar, the global sugar economy is in practice a 'thin market'. Such markets are very vulnerable to the effects of relatively small variations in output or disruptions to existing trading patterns and tend to react dramatically to any such events. As it currently operates, the global sugar market serves to: (a) increase the volatility in the price of openly traded sugar on the world market; and (b) to depress the price for sugar on the open market in the long term. According to Sturgiss, Tobler and Connell (1988), the joint effects of EU, US and Japanese policies has been to depress the world price by around one third whilst increasing price volatility by 28per cent. In practice, long term supply contracts offer little protection from this trend as they are necessarily negotiated within the context of structural overproduction and the very depressed prices which occur in the open market.

There have been a number of attempts to regulate international sugar trade and prices during the twentieth century. The most significant of these have been those promoted by the International Sugar Organisation (ISO) which incorporates both sugar exporting and importing countries. The ISO promoted a series of International Sugar Agreements (ISAs) in 1953, 1958, 1968 and 1977. These agreements attempted to keep sugar prices within predetermined bands by allocating Basic Ex-

port Tonnages (BET) - effectively voluntary export quotas - to producer countries, and through the development and controlled release of buffer stocks. In practice, the ISAs proved to be almost totally ineffective with prices straying outside bands for almost as much time as they stayed within them (see figure 2). When the 1978 ISA lapsed in 1984 it was subsequently extended for a further 2 years, but no new agreement was negotiated. The effective failures of successive ISAs has been held to reflect various problems including: non-participation of major parties including at various times both the EU and the USA; non compliance with BETs; free riding; and demand trends for sugar which have tended to be much more static than has often been predicted (Abbott:1990, FAO:1987).

The global sugar economy has been and remains typified by structural overproduction, volatility and increasingly depressed prices. Many sugar producers have found this to be an increasingly uncertain and stressful context in which to operate. Certainly, this has been the case in the two industries examined here. Although the Australian and Barbadian industries are very different in terms of their structures, levels of capitalisation, mechanisation and exposure to the free market, both have found sugar production to be a progressively more difficult endeavour. To some extent, the problems encountered in these locations do reflect the nature of global sugar economy. However, the specificity of dysfunction has varied according to specific local factors, as have governmental and producer responses to the problems which have emerged. The analysis here will attempt to provide a multi-level explanation of the dynamic and transformational processes which have affected and often served to prejudice the sugar industries of these two countries.

3 The Barbados sugar industry

Barbados has a long history as a sugar island. English settlers established the first permanent European presence on Barbados in 1627 and within twenty years sugar production had become firmly established (Beckles 1990; Watts 1987). Indeed sugar rapidly came to dominate the island and the lives of its people and continued to do so for the next three hundred and fifty years.

Throughout almost all of its history the Barbadian sugar production has been dependant on the exploitation of various forms of coerced labour. Sugar estates on Barbados were first developed through the use of indentured labour, mainly British craftsmen and labourers contracted to work on the island for specific periods. However, it soon became obvious that the scale of labour required could notadequately be met in this way and estate owners turned to the purchase of slaves to meet their labour requirements. There were 6,000 slaves working on estates in 1650 and approximately 20,000 by 1653. By the mid 1660s there were more slaves on the island than there were whites. In 1833, when slavery was abolished in the British Caribbean, the slave-white ratio had reached over six to one, with over 80,000 slaves and less than 13,000 whites (Watts, 1987:311).

Legacies of this, often unfortunate, colonial history still influence the Barbadian sugar industry today. Some 100 plantations, typically around 100 hectares in size, remain the basis of sugar production. And, perhaps even more consequentially, the racial and class structures which historically underpinned plantation based sugar production also retain considerable significance. Over 95 per cent of the present day Barbadian population of around 259,000 are of African descent. Approximately 4 per cent of the total population are white with about half of these being indigenous Barbadians, the remainder being recent immigrants. Certainly, racially based tensions are apparent enough and these are frequently expressed in black antipathy to sugar production and to a white 'plantocracy' which in popular perceptions at least is still understood to control the industry (Beckles: 1990; Drummond and Marsden: 1995a).

Barbadian sugar production, which had stood at about 50,000 tons in the first decade of the twentieth century, tripled in the period up to 1970, peaking at over 200,000 tons in 1967 - the year following independence. However, the industry started to contract during the 1970s and was plunged into crisis during the early 1980s when both planters and the factory sector experienced liquidity problems (see figure 3). These problems led the Barbadian government to embark on a massive programme of support for the industry. During the 1980s, the Government of Barbados (GOB), mainly through the loans and

securities provided by the Barbados National Bank (BNB), supported the sugar industry with what, in the context of Barbados' small size, were extremely significant sums of money.

A number of specific reasons were cited to legitimate this extremely high level of support. Although earnings from sugar exports have fallen dramatically in recent years, sugar exports still represent one of very few sources of foreign exchange for Barbados. It is also widely claimed that unlike the situation with the tourist industry where a high proportion of inputs are imported, most of the earnings from sugar are retained within the island. However, Barbados' sugar production would not be viable outside the context of the ACP agreement, and as the GOB were most certainly aware, any failure to fulfil their quota would almost certainly prejudice Barbados' future access to this extremely preferential market. Thus maintaining production at a level which would allow the quota to be filled was seen as being vitaliy important. Even though sugar industry employment in the early 1980s was much less significant than it had been in the past, support for the industry was seen as a way of maintaining jobs at a time when unemployment levels were already high. The agro-industrial nature of sugar production was also seen as being significant, because a 'critical mass' exists below which the industry could have no chance of operating profitably. In a situation where less cane is being produced, the essentially fixed costs of the milling sector would become increasingly significant and would undermine the profitability of the industry as a whole.

Sugar cane is also seen as being important to the island's environment. In particular, it is widely claimed that it is highly significant in preventing soil erosion. The contention is that sugar cane provides uninterrupted ground cover for a period of at least four years and thus protects the thin and easily eroded soils. Certainly, several areas where cane land has been abandoned have experienced severe problems of erosion in recent years. It has also been suggested that any large scale change in the island's vegetation cover, such as would occur if sugar cane production were to cease, might well transform the island's hydrological characteristics and thereby prejudice the island's water supply security. Maintaining a landscape with a high amenity value commensurate with visitors' perceptions of a green and productive

tropical island is also held to be important to the tourist industry.

A further argument frequently cited by many planters to legitimate support for the sugar industry is that few, if any, alternative forms of agriculture are viable on the island. This would appear to be a dubious contention. The Barbados Ministry of Agriculture has suggested that a more diversified agriculture is both desirable and possible and has maintained this as a primary policy objective for some time (GOB: 1956; 1965 & 1988). Although non-sugar agriculture is now more significant in terms of GDP, sugar cane still accounts for majority of agricultural land on the island. Indeed much of the value of non-sugar agriculture on Barbados is accounted for by the intensive production of chickens and pigs which has developed in recent years.

The explicit rationale for GOB support of the sugar industry encompasses two sets of arguments. First, the industry may or may not be worth sustaining because of what it is, for example, because of the foreign exchange it can generate. Second, it is also recognised that should the industry collapse, this might well produce a range of problems such as accelerated soil erosion, increased unemployment and changes in the island's hydrology; all of which might well be considered unsustainable in themselves. Thus there may well have been a strong case, at least for short term support of the industry while new forms of agriculture were established. In practice, however, the nature of GOB support for the industry has extended beyond this.

Despite the a massive amount of support afforded the Barbadian sugar industry during the 1980s, it was quite apparent by the early 1990s that the situation had gone from bad to worse. Sugar production which had already declined by over 60 per cent between 1967 and 1980, fell by another third between 1981 and 1992, dropping to around 50,000 tons - a level of production which was insufficient to meet both domestic demand and the EU quota. In 1992, production was still highly inefficient by international standards with, for example, around 40 per cent of the harvest still being cut manually. Both the factory sector and many individual plantations had accrued debts which they had no hope of servicing. Moreover, at a macro-economic level, the overall industry debt was beginning to have serious consequences for the

GOB.

By 1992, BSIL[3] - the company which operated Barbados' three sugar mills - had debts of around B$170m with over 80 per cent of this total either owed to or underwritten by the Barbados national Bank (BNB)[4]. Plantation debt to the BNB amounted to B$113m with approximately B$30m owed to other creditors. Some 52 plantations were unable to service their debts at this time. Around 40 were not unable to continue production because they could not meet their day to day operational costs. These heavily indebted plantations accounted for 13,000 acres or 46 per cent of the cane land in Barbados. A total of B$ 249m (88 per cent) of the total industry debt could be regarded as delinquent in June 1992 (Booker Tate:1993). By this time GOB loans to the plantation sector amounted to B$6,800 per acre of plantation - a figure considerably above the value of agricultural land. A large number of individual plantations each had debts of over two and a half million Bajan dollars and the total industry debt to the BNB represented approximately B$1000 per person in Barbados. By the early 1990s, the Barbadian sugar industry had come to the very edge of total collapse. Sugar production had fallen consistently for twenty years and was no longer sufficient to meet both the EU quota and domestic demand, and the industry had massive and effectively unserviceable debts. In 1993 the GOB engaged Booker Tate[5] to manage an eleventh hour and somewhat desperate restructuring of the sugar sector. Although Booker Tate claimed, correctly, that considerable potential existed for efficiency gains through more rational use of machinery and consolidation of production units, they themselves recognised quite clearly that even if such gains could be achieved, these were unlikely to be sufficient to make the Barbadian sugar industry viable.

4 The Australian Sugar Industry

Although the establishment of the Australian industry post-dated that in Barbados by some 200 years, it did initially mirror the Caribbean model in that it was based on plantations. However, problems in maintaining adequate labour supplies resulted in a transformation of the industry structure to one based on large numbers of relatively small family farms and

centralised mills at the end of the nineteenth century (Graves: 1993). Today some 6,000 family farms and 28 privately and co-operatively owned mills, over 95 percent of which are located in Queensland, remain the basis the Australian sugar industry. The majority of these farms are similar in size to Barbadian plantations with most having between 30 and 90 hectares of cane (Sugar Industry Commission: 1992:23).

Largely because of the need to address the tensions which emerged between farmers and the milling sector, a wide ranging regulatory system was established in the early years of this century. For the last seventy years, almost every aspect of the Australian sugar industry has been highly regulated. Statutory controls have covered not only the amount and location of land on which cane could be grown, but also whether or not that land might be sold and at what price. Farmers were obliged to deliver their cane to a particular mill, and the framework for determining the price they would be paid was set out in legislation. The domestic market was protected and prices were fixed. Compulsory acquisition powers covering all sugar production also underpinned a system of centralised marketing whereby all Australian sugar was sold through the state governments or their agents.

Although the regulatory system which evolved was extremely comprehensive and in some ways detailed and complex, actual government involvement in the day to day operation of the industry was never that great. The Commonwealth government's role was largely confined to strategic considerations such as international terms of trade. Most statutory controls on the sugar industry have been enacted at state level, but in practice their operation was normally delegated to various industry bodies such as the milling companies and producer organisations. In practice, the regulatory system functioned effectively because of the total inter-dependence of different sectors of the industry. It allowed a very high degree of control to be achieved through the use of a limited number of measures. For example, by controlling the output and incomes of the mills it was possible to delegate more detailed regulatory functions to this level.

A further difference between the Barbadian and Australian sugar sectors lies in the almost total commitment to modernisation which has been a key feature of the Australian Industry. Australia has been at

the forefront of development of specialised technology for sugar cane agriculture for several decades. The use of modern technology has become deeply ingrained in the culture of Australian sugar cane agriculture. Virtually the entire crop was being harvested mechanically by 1973 (Lance Jones & Co., 1975). A sophisticated cane transport and sugar handling infrastructure exists throughout the cane producing areas of Australia. There are, for example, approximately 3,900 kilometres of specialised narrow gauge railway for transporting cut cane from fields to the mills. A total of 70,000 hectares of sugar cane land are irrigated in Queensland with several areas benefiting from specially constructed irrigation schemes. Australia also has a highly developed sugar industry research and development infrastructure spanning both the agricultural and milling sectors (Queensland Sugar Corporation:1992a)

During the last thirty years Australian sugar output has more than doubled, rising from 1.3 million tonnes in 1960 to over 3.3 million tonnes in 1990, (see figure 4). Throughout this period, productionist policies have produced periodic increases in the amount of assigned land which rose from 300,000 hectares in 1970 to 360,000 hectares in the early 1980s. There has also been a trend to further intensify an already highly mechanised and chemicalised production system.

By the 1990s, Australia was producing around 3.5 per cent of total world sugar output. production Approximately 80per cent of Australian production, worth well in excess of A$1 billion, was being exported[6] which made Australia the world's third largest sugar exporter with around 10per cent of international trade, after Cuba - 24per cent and the EU - 20per cent (Queensland Sugar Corporation, 1991:6; F.O. Licht, 1994). Traditionally, Britain had been the primary market for Australia's sugar exports and in 1954 this trade was formalised under the terms of the (British) Commonwealth Sugar Agreement. When the CSA expired in 1975, Australia was the only former party to the agreement not to be included in the ACP Protocol of the Lomé Convention. Thus from 1975 onwards Australia had to find markets for substantial quantities of sugar exports within the global sugar economy. A large proportion of subsequent exports took place under a series of bilateral arrangements with importing countries, most notably with Japan. However, whilst these

agreements may have created some degree of price stability for the industry, they never included any great premium over prevailing world market prices (Queensland Sugar Corporation (1992c). By the end of the 1980s Australia was exporting the majority of its sugar to nine main destinations. Japan accounted for 20per cent of all exports, Malaysia 19per cent, Canada 15per cent, South Korea 13per cent, the USSR 11per cent, China 7per cent, Singapore 6per cent, the USA 6per cent and New Zealand 3per cent (Sugar Board, 1991). Between 25per cent and 30per cent of these exports were covered by long-term contracts which existed with Malaysia, South Korea, China and the Soviet Union (ABARE, 1991:17). The Australian sugar industry has probably been more exposed to world prices that of any other major producer. According to the Senate Committee on Industry Science and Technology, (1989:12), if the exposure of exporting countries is ranked on a scale of 0 - no exposure, to 4 - complete exposure, only two countries: Australia and Thailand rate a score of 3

Not least because of this high degree of exposure to the global sugar economy, the Australian sugar sector has found the last fifteen years extremely stressful. Farm incomes have generally been very low and many farmers have been quite unable to make a living from cane production. Large numbers of farms have high and unserviceable debts. The economic stress on the industry is also creating a range of other problems. There are particular problems with inter-generational transfer and the average age of cane farmers is now in the high fifties. 'Get big or get out' was very much the institutionally promoted industry watchword off the 1980s, and whilst most farmers were willing enough to accept this philosophy, it has begun to have dire consequences for many individuals as small and medium size enterprises are being replaced by larger production units. Around 1,500 family farms disappeared between 1970 and 1986 (Powell and McGovern, 1987:17).

The Australian government's primary response to these developments has been to deregulate the sugar industry. Deregulation of the agricultural sector has part of wider Australian government policy for some years (Lawernce *et al*, 1992; Alston, 1991) and in fact, the sugar industry was the last major sector of Australian agriculture to undergo deregulation. However, by the late 1980s a comprehensive

programme of deregulation of the sugar industry was being instituted and by 1994 virtually all controls on the industry had been removed[7]. Given the extremely high level of regulation which had previously pertained within the Australian industry, this agenda has involved, and is likely to continue to involve, profound and potentially highly significant transformations of the most basic structures of Australian sugar production. In practice, deregulation of the Australian sugar industry amounted to a neo-liberal response to what were perceived as increasingly significant barriers to efficient production, However, whilst deregulation may well allow the industry to remain internationally competitive in the short term, it is almost certain to engender new contradictions and sources of dysfunction which will prejudice the longer term development of the industry.

In ways which are closely paralleled throughout the world, the Barbadian and Australian sugar sectors have both experienced increasingly profound problems in recent years. In Barbados, production has declined steadily and the industry has apparently reach the point of total collapse despite the guaranteed market and preferential prices provided by the ACP arrangements. Last gasp attempts to restructure the industry have focused on measures to increase the technical efficiency of production. In Australia, output has not fallen, but the industry has been highly stressed by a sustained period of depressed sugar prices on the international market. The key response to this has been to deregulate the industry. Whilst this may reduce production costs in the short term, it is almost certain to create or accentuate other problems, such as the increasingly untenable position of the family farm.

5 Regulating sugar production

It is hardly profound to suggest that producing sugar has become increasingly stressful and problematic. Neither is it particularly trenchant to contend that both general factors such as the nature of the global sugar economy and contingent factors such as the levels of technology being used in particular locations, are significant in this. The volatility of the market and the increasingly depressed sugar price are widely accepted as factors which affect most, if not all, sugar producers. Hence the

ill-fated attempts to develop International Sugar Agreements. Equally, attempts to explain the problems which sugar industries face often cede considerable significance to purely local factors. In practice, however, locally contingent factors are usually held to be synonymous with efficiency measured in terms off cost competitiveness. Both the sugar industry restructuring programme in Barbados and the deregulation of the Australian sugar industry have the central aim of promoting greater efficiency. This sort of reductionism is probably inappropriate. Apart from the fact that there must be some limit to the incremental efficiency gains which can be made, factors other than efficiency can support or undermine industries such as these. And, even more significantly, any analysis which focuses on these two levels of causality in isolation is likely to be incomplete because developments within these industries need to understood as outcomes which reflect not just structural mechanisms and contingent factors but also the processes of structuration which link these. This paper attempts to explore this relationship through a multi-level interpretation of events incorporating key insights from regulation theory.

The original rationale for the regulationist project stemmed directly from the recognition that capitalism is not an equilibriating process (Aglietta:1979). Thus, regulation theory has attempted to explain how capitalism could survive despite crises congenital to the logic of capital accumulation. The suggestion is that conflict is avoided or at least postponed through a mode of social regulation (MSR) - an ensemble of norms, institutions, organisational forms, social networks, and patterns of conduct - which constitute the conditions necessary for continued capital accumulation. Thus regulation theory replaces the notion of 'reproduction' with one of 'regulation'. (See, for example, Aglietta:1979; Boyer:1990; Jessop:1990).

Regulation theory is based on the premise that the emergence of contradiction and dysfunction is an inherent feature of the capitalist dynamic. Although regulationist thinking has been primarily concerned with the ways in which capitalist economies as a whole have been sustained over relatively long time horizons, the logic which it employs remains pertinent to the analysis of individual sectors. Contradictions which prejudice entire 'regimes of accumulation'[8] must, necessarily,

be constituted in increasing dysfunctionality within individual sectors. And as the Barbadian and Australian sugar sectors demonstrate, at least some socio-economic formations do tend to become increasingly dysfunctional and crisis prone through time. Regulationist thinking posits a particular view of view of contradiction and crisis which is of considerable relevance to the analysis of problems which have beset the sugar industries being considered here:

"Embedded within this approach is the possibility of different forms of crisis: (a) short 'conjunctural' crises requiring minor adjustments (for instance, incremental technological changes, expanding spatial divisions of labour, and institutional adjustments); (b) structural crises (or crises of a particular mode of development) leading to qualitative changes in the organisation of the accumulation process; (c) crises resulting from fundamental contradictions in the capitalist mode of production itself." (Moulaert and Swyngedow, 1989:329).

An important point here, is that the contradictions which have served to prejudice sugar production in the two case studies included here, and indeed elsewhere, have generally been perceived of and addressed in terms of 'conjunctural crises', when they might well often be better understood as reflecting the second and third types of crisis outlined above. Certainly the approach adopted in Barbados has sought to maintain the industry through 'minor adjustments' without any qualitative restructuring of the accumulation process or the regulatory context in which this occurs. In Australia, the sugar industry's problems have been interpreted as a structural crisis, but the restructuring engendered by deregulation is hardly likely to promote qualitative changes in the organisation of the accumulation process. Indeed in both of these cases, regulation has legitimated and enabled strategies which serve to sustain the established structures of the accumulation process. They have served to sustain the value of capital and the validity of established patterns of social relations rather than the basis of sugar production or for that matter the environmental and social basis of that production. A more detailed examination of developments within the Barbadian and Australian sugar sectors illustrates the nature of this dialectic.

The inclusion of Barbados within the ACP agreement provided a guaranteed market and preferential prices which it was anticipated would allow the island to continue producing sugar after independence. However, these expectations were clearly unrealistic as the industry soon experienced a range of problems. When returns to the agricultural sector fell during the early 1980s, one widespread response by the plantation sector was to extend ratoon lengths. When a first crop of sugar cane is cut, the remaining stalks or 'stool' will regrow to produce a further crop. This process is known as ratooning and can be repeated almost indefinitely, but yields and sugar content fall with each subsequent harvest. Four or five ratoons are normally seen as an optimal compromise between cost savings in avoided cultivation and falling returns from lower yields. The nature of ratooning is such that planters can get something of a free ride for a number of years, but such a practice soon becomes irrational as falling returns outweigh saved cultivation costs. A clear trend to falling yields experienced during the 1980s appear to indicate that ratoons were extended and indeed that other inputs were reduced beyond those which would have been commensurate with any rational long term survival strategy (Drummond and Marsden:1995a). Thus an existing problem of decline in the industry was accentuated to a point where the GOB were pressured into providing massive amounts of support to the sugar sector. However, again this proved to be a manifestly imperfect strategy as production continued to fall. In practice, it is clear that little of the support provided to the industry was actually invested in sugar production and that large amounts of capital were transferred out of sugar production to other sectors of the economy and probably abroad during the 1980s (Drummond and Marsden:1995a). Two factors seem to have underpinned this trend. First, a situation had developed where sugar production was not unprofitable per se, but where it was relatively less profitable than other investment opportunities, such as the rapidly developing tourist industry. Second, it had become increasing apparent to all concerned that the future of the Barbadian sugar industry was at best insecure, not least because of uncertainty regarding the future of the ACP arrangements. In this situation, it became rational for estate owners to cease investment in sugar production and to transfer capital out

of sugar and, in practice, this is what has occurred very widely. This type of explanation for the demise of the Barbadian sugar sector provides a telling commentary on the potential of the GOB's latest attempt to address the problems of the sugar industry by engaging Booker Tate to restructure the industry. Booker Tate intend to try and sustain production by promoting efficiency gains, but inefficiency is only part of the problem here. Equally significant is a pattern of social relations and property rights which have persisted from the island's colonial past. These have allowed a small economically, and hence politically, influential elite group to effectively sustain their individual interests irrespective of the consequences for the sugar sector or the wider development of Barbados.

The history of Australian sugar production also embodies a number of moments which exemplify the ways in which various contradictions tend to arise and the imperfect and temporary nature of the strategies used to address these. The plantations around which the Queensland industry was formed became increasingly dysfunctional because of labour supply problems towards the end of the nineteenth century and the industry structure changed to a system based on family farms. The inherent flexibility and potential for self exploitation provided by a family farmming structure allowed the industry to continue to function effectively for several decades. By the 1940s and 50s, however, new problems of ensuring adequate labour supplies had again started to emerge despite the comprehensive system of regulation which had been established within the industry. In this instance, the problem was addressed by substituting capital and technology for labour and again this allowed the industry to function effectively for some time. Despite the fact that production methods continued to become progressively more technologically efficient in subsequent decades as farmers invested in progressively more capital intensive production systems, the industry had again become increasingly dysfunctional by the 1980s as low sugar prices prejudiced the economic position of the vast majority of cane farmers. The primary solution to this was to deregulate the industry. This is allowing rationalisation of the industry structure to something which is, in some ways at least, more sustainable. For example, the removal of the assignment system has facilitated the pre-existing trend to larger, tech-

nically more efficient and more cost effective production units. Deregulation has allowed presures to 'get big or get out' to be realised in practice, and now the family farm is clearly and profoundly prejudiced. Whether or not this is considered to be morally unacceptable is hardly the point, more significant is that fact that the flexibility of family farming structure has, more than any other factor, been the key to Australia's success in sugar production for almost a hundred years. An apparently expedient solution to one contradiction with the industry has been partially successful, but it has contributed directly to the demise of the family farm and thus it will in all probability have created new barriers to the reproduction of the Australian sugar industry.

6 Exigency, expediency and expendability

These case studies provide incisive commentaries on notions of sustainability and the nature of the regulatory process. Both of the Barbadian and the Australian sugar industries have become increasingly stressed through time. In each case, problems have emerged and a range of more or less objective strategies have been promoted to address these. Some of these strategies have been successful in that they have allowed the industries to continue to function, but almost invariably, they have been imperfect as solutions, in at least two ways. First, they have tended to involve progressively severe forms of exploitation. A good example of this is the way in which the modernisation of the Australian sugar industry has produced increasingly chemicalised environments and in some locations problems of water mining and salinisation. In Barbados, strategies which have resulted in land being taken out of sugar have frequently resulted in problems of accelerated soil erosion. Second, in both of these cases, the strategies adopted have tended to create new and usually more severe contradictions and potential for dysfunctionality within the industries. For example in Barbados, it is easy enough to see how extended ratooning prejudiced the future of the sugar sector. In Australia, the processes which are sustaining ever greater sugar output at ever lower costs are clearly destroying the family farm - a development which is likely to have quite profound consequences for the industry in the longer

term.

Each of the contradictions and strategies which have occurred in these two industries are different in that they are specific, but they are hardly singular. All are related to an omnipresent tendency for the industry and the socio-economic formation in which it is constituted to become progressively more stressed and crisis prone through time. Each specific moment of contradiction is just that a moment in this process. Similarly, the outcomes engendered are contingent and may vary from place to place and at different times, but elements of commonality exist. The outcomes realised in practice tend to reflect increasingly profound forms of exploitation and, despite this, they remain temporary and imperfect solutions to the industries' problems.

Notwithstanding expedients, such as the provision of credit, subsidies, the application of new technologies, or the acquisition of new markets and so on, regulation is always likely to involve an incidental devaluation of both natural and human resources. It is usually a matter of where and when this occurs. As these case studies demonstrate, particular instances of regulation may, temporarily, postpone the expression of economic dysfunction and crisis, but in doing so they tend to fundermine the undamental social and ecological fabric of sustainability. Whilst particular elements of regulation or particular regulatory instruments may avert particular crises, they tend only to redirect rather than counteract the tendencies which give rise to these events. Without regulation the accumulation process cannot function, but inevitably there comes a point where the dynamic can only be maintained through systems of exploitation which are by their nature unsustainable. Increasingly therefore, the capitalist accumulation process requires modes of social regulation which justify and legitimate materially unsustainable forms of exploitation. Whilst the MSR as whole remains intact, increasingly exploitative and degrading practices are always going to be legitimated and empowered. Thus there will always be a tendency to increasingly unsustainable outcomes.

A key point here is that modes of social regulation come about through a process of experimentation and struggle rather than through objective promotion *per se*. As particular contradictions or crises emerge, more or less objective strate-

gies are devised to address these. Which strategies are actually realised is largely determined by the wider mode of social regulation which selectively legitimates and empowers some whist negating others. As they are currently constituted, modes of social regulation condition development in ways which are fundamentally biased. To some extent, this reflects the fact that regulation is normally articulated through existing power structures. In Barbados, it is easy enough to understand how an economically and politically powerful elite group has subverted the political agenda to its own ends. In Australia, the power structures are less transparent, but clearly there are interests there which are more significant and more influential than the family farming sector. However, the problem is more basic than this. Modes of social regulation come about through a process of experimentation and struggle in which their validity is determined by their correspondence to an object of regulation defined by the exigencies of the capitalist dynamic (Drummond and Marsden: 1995b). The wider modes of social regulation in both Barbados and Australia relate to a specific object of regulation which is external to either the sugar industries of these countries, their environments and their populations. In both of these cases the MSR has ascribed flexibility and priority to purely capitalist and class interests rather than the material or social basis of sustainability. The usual outcome of this has been the legitimation and actualisation of increasingly exploiatative practices and the degradation of environmental and human resources and sugar industries which are ever more crisis prone.

As much of the twentieth century testifies, the inherent unsustainability of socio-economic formations can be postponed, but in practice only through measures which tend to involve other forms of unsustainability. A useful conceptual distinction arises here between what might be termed *formational sustainability* and *material sustainability* (Drummond and Marsden: 1995a; Drummond and Symes: 1996). The former is both the overriding object of regulation in capitalist societies and the condition which ensures the viability of a particular mode of social regulation. What tends to occur in practice is that the inherent unsustainability of socio-economic formations - particular capitals and the class structures associated with these - is deferred, but only through processes

which involve increasingly severe forms of exploitation. The essentially inconsequential unsustainability of social formations is translated into other more materially and morally significant forms of unsustainability. As the viability of a particular socio-economic formation becomes threatened, strategies designed to preserve the value of capital and the viability of extant patterns of social relations are devised and promoted. Contradictions which emerge in a particular place at a particular time are deferred through the provision of credit or subsidies, or exported through protectionism or the exploitation of new resources and markets. Which strategies are actually 'successful' is determined by the mode of social regulation which selectively legitimates and empowers some strategies whilst invalidating others.

7 Conclusions

Moulaert and Swyngedow's explication of different forms of crisis can help clarify the implications which this interpretation of regulation has for the sugar case. The analysis here suggests that the contradictions which tend to prejudice sugar production do often reflect fundamental contradictions in the capitalist mode of production itself. Regulation can hardly negate these. However consideration can and should be given to what constitutes the most appropriate forms of regulation within the context which this deflnes. In practice, most attempts to regulate sugar production have involved either policies designed to control overall levels of production - the ISAs or the Cairn's Groups arguments in favour of a total liberalisation of international trade; or what Moulaert and Swyngedow term minor adjustments to what are perceived as 'conjunctoral crises' - incremental technological changes and the like. Where more profound measures have been promoted, such as the deregulation of the Australian sugar sector, these have not involved qualitative changes in the organisation of the accumulation process. Rather the opposite, the regulatory measures enacted have been largely determined by the wider mode of social regulation and, in practice, they have served to sustain established class structures rather than the environmental and social resources which underpin sugar production. The effective regulation of sugar

production requires a reappraisal not just of the structural properties of the global sugar economy or specific feature of local production systems, but also of those elements of the MSR which link structurally defined tendencies to the practices and outcomes actually realised. At present, MSR are defined by an object of regulation which is centrally concerned to sustain economic growth and through this to protect extant class structures. Thus environmental and social resources are devalued before established patterns of social relations are invalidated. As the transition from plantation based production to family farms demonstrates, production can be sustained through strategies which devalue property rights and power rather than the material basis of sustainability, but this is not what currently happens. Regulation of sugar industries needs to be concerned as much with the norms and values which legitimate and empower specific instruments as it is with the instruments themselves.

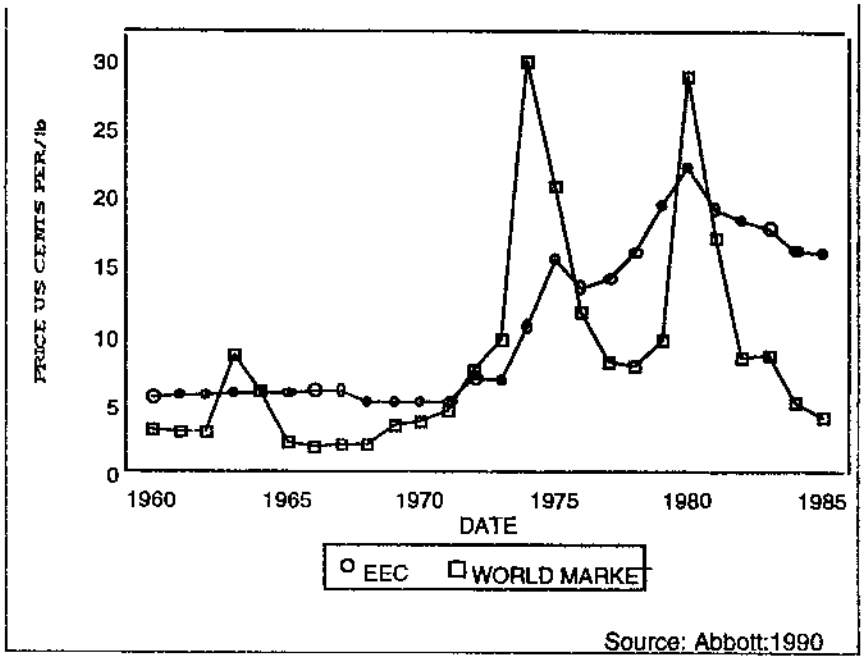


Figure 2. **ISAs and world sugar prices**

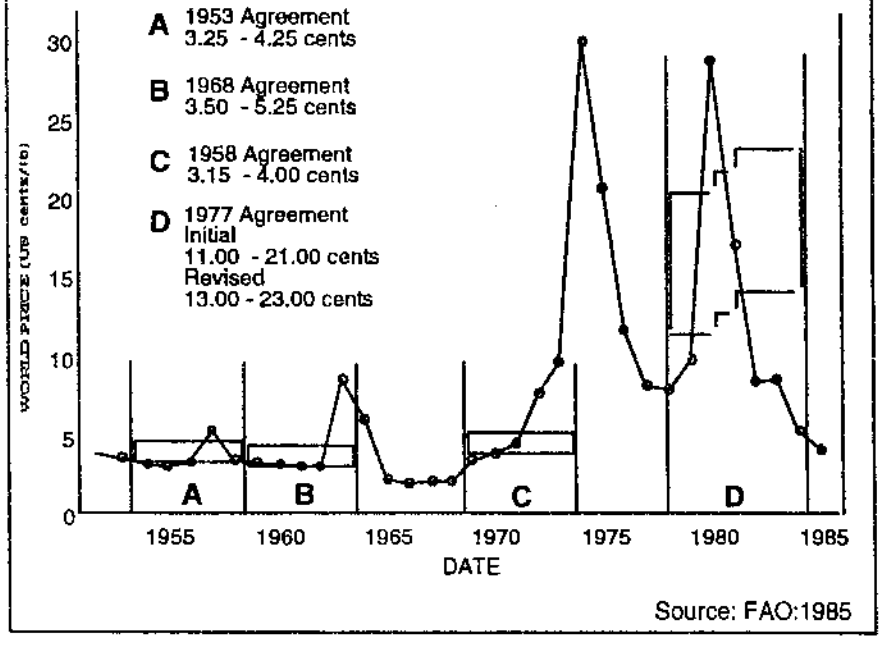
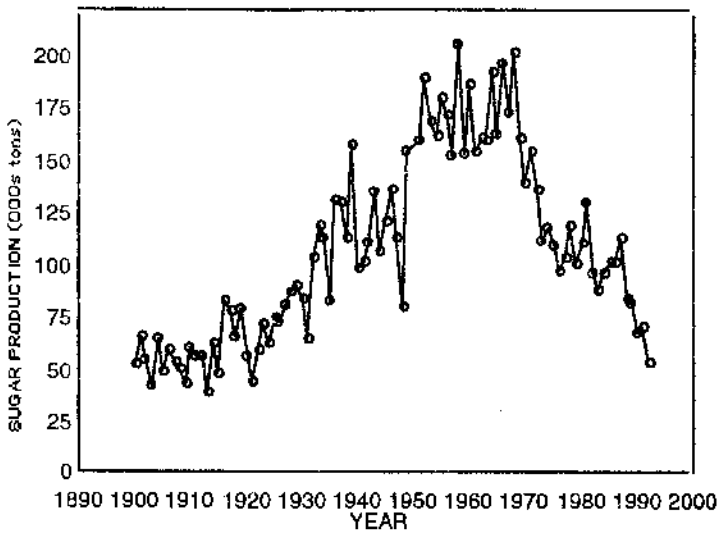
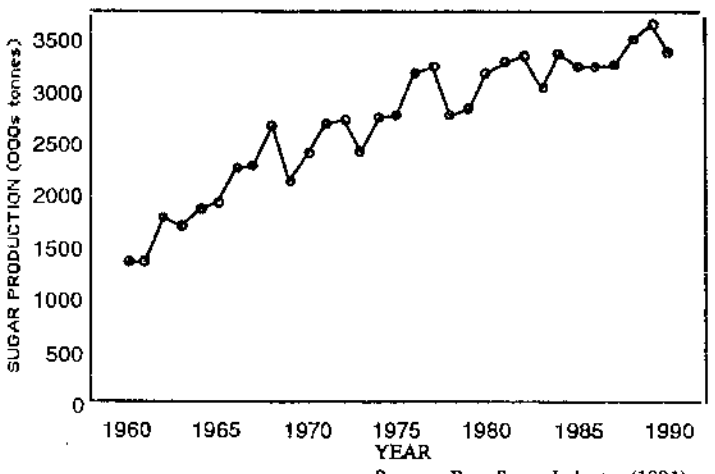


Figure 3. **Barbados Sugar Production 1900 to 1992**



Source: BSIL

Figure 4. **Queensland Sugar Production 1960 - 1990**



Source: Raw Sugar Industry (1991)

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Notes

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1 In 1985 values.

2 For an explanation of the EU sugar regime see Coote (1987); Borrell & Duncan (1990); Abbott (1990).

3 BSIL. Barbados Sugar Industries Limited. Share ownership in the company was restricted to major sugar producing landowners on the island.

4 The Barbadian dollar is formally linked to the US$ at a rate of B$2 = US$1.

5 Booker Tate is a jointly owned subsiduary of Tate and Lyle and Booker.

6 At 1995 exchange rates, A$1=c.£0.50, c.US$0.75).

7 The one aspect of the regulatory system which remains is the single desk marketing arrangement for all Australian sugar exports.

8 In regulation theory, a distinctive period of sustained accumulation is referred to as a 'regime of accumulation'.

Agricultural Trade, Firms and the State: Extrapolations From the Case of Japanese Beef Imports*

*Raymond A. Jussaume Jr.***

1 Introduction

Until recently, much of the research on beef trade with Japan was focused on analyzing the role of the Japanese state in the importation of beef into that country. Until beef import liberalization began on April 1, 1991 (Mori and Lin 1994), the national government directly managed these imports by having the quasi-governmental Livestock Industry Promotion Corporation (LIPC) purchase and warehouse frozen imported beef (Mori et al. 1988; p. 3). Many researchers, particularly non-Japanese scholars, criticized this practice by arguing that it restricted free trade and was detrimental to overseas suppliers and Japanese consumers (for example, Anderson and Hayami 1986; Lloyd et al. 1987). When, after more than a decade of resisting political pressures from exporting countries, particularly the United States, to liberalize imports of agro-food products (Mori and Lin 1994), the Japanese government announced that it would open up beef imports as part of a broader liberalization policy, the focus of scholarly attention shifted towards discussion of the relationship between prices and demand for various types and quality grades of beef in the Japanese market (Wahl et al. 1992; Furuya and Kusakari 1992). Nonetheless, academicians and journalists alike continue to refer to "American" and "Australian" beef exports to Japan, as in "Last year, the U.S. exported to Japan 185,000 tons of beef, and the U.S. share of the Japanese market was up some 2 percentage points from a year earlier" (Nikkei Weekly 1993).

The objective of this paper is to contribute to the formation of a new approach for analyzing agro-food trade by examining the new institutional structures that are arising to manage beef trade with Japan now that the direct role of the Japanese state has been terminated. This analysis is built upon theoretical concepts of the relationship between firms and markets (Coase 1937; Stinchcombe 1990; Williamson 1985), as well as (Bernard 1994; Bonnano et al. 1994; Jussaume 1991; Marsden 1992). Uti-

lizing this framework, I maintain that it is time to desist in conceptualizing trade as though it takes place between countries and use an approach that identifies the actual actors and market institutions through which this trade is conducted. In other words, I contend that while it is true that commodities, finished goods, services and capital are increasingly being transported across international borders, this trade is managed primarily by profit-making firms. Therefore, more emphasis needs to be placed on understanding the role of firms in controlling international trade and what this means for socio-economic development at both the macro and the micro levels.

To develop this argument, this paper is divided into three subsequent sections. The first briefly reviews the academic literature on firms and hierarchies. The purpose is to show that there is a strong theoretical foundation in the social sciences for developing a research methodology on international trade that conceptualizes that trade as taking place between firms. This section concludes by developing a hypothesis that access to markets around the world may become more difficult for small or new firms to access as the global, capitalist economy matures. The second section utilizes the case of the liberalization of beef imports into Japan to test this hypothesis and to show how this change in Japanese governmental policy has led to the formation of business ties between large Japanese and small non-Japanese firms. The final analytical section features a case study that describes the effort of some American producers to raise *Wagyu* beef as part of a strategy to gain a foothold in the Japanese market. The paper concludes with a discussion about the nature of inter-firm competition in the contemporary global economy.

2 Theoretical Background

Many contemporary economists focus their research on understanding how prices are determined by various supply and demand characteristics. Consequently, much of the research on international trade ostensibly is based on the assumption that buyers and sellers conduct their transactions in an open, global market, and thus examines how trade flows between nations. There is rarely any discussion of

the actors who conduct this trade and dedicate themselves to expanding and preserving their "market share," which in numerous cases translates into a privileged access those markets. This is curious given that there is a research tradition in the social sciences that investigates how economic transactions take place in socially constructed markets.

Discussions of how firms remove economic transactions from the marketplace are commonly accepted to have originated with the work of Coase (1937), a Nobel-prize laureate who proposed that there were costs associated with using market price mechanisms when they became greater than the costs associated with internalizing those same transactions within the firm. In other words, one could assert, as Adams (1992) has, that Coase was like Polanyi in arguing that firms are in the business of removing transactions from the market place. Williamson (1975) re-framed this proposition nearly four decades later in terms of markets and hierarchies. One of his principal research objectives has been to uncover the environmental and human factors that determine whether it is more efficient for a firm to execute a transaction within its own bureaucratic structure or to utilize the market. Recently, Williamson has developed this idea further by arguing that "Not only are there a variety of market nodes, which is to say that the study of hybrids is pertinent, but there are a variety of ways to organize hierarchies" (Williamson 1985; p. 344). In other words, markets are socially constructed, take various forms, and are controlled to one extent or another by the participating organizations.

The notion that there are a variety of institutionalized settings in the global capitalist economy within which economic transactions occur is becoming increasingly popular in sociology as well. For example, both Granovetter (1985) and Clegg (1990) have pointed out that economic activity is a category of social action that is "embedded" within an intricate web of social relations. Their work suggests that firms make explicit efforts to bring economic transactions under their control, thus restricting "market access" to other actors. Stinchcombe (1990) has analyzed why some businesses create intra-firm hierarchies and others inter-firm hierarchies. In either case, the end result is the same, i.e. transactions are taken out of the open market. All of this research has contributed to

the development of a theoretical orientation that maintains that there are various types of business transactions, and that most of these do not take place in a free market where a large number of perfectly informed buyers and sellers exist.

Research coming out of this tradition argues that the growth of large firms is a defining feature of 20th Century Capitalism (Wier 1991), which intimates that the percentage of transactions taking place within firms and integrated firm hierarchies is growing while the proportion of open market transactions is declining. This viewpoint is compatible with the theoretical orientation surrounding discussions about the globalization of capitalism and the change to a "post-fordist" political economic regime (Bonanno et al. 1994). It is argued that in this post-fordist era, a new form of transnational capitalism is emerging, which is made possible by "the production of new, more varied markets and consumption practices associated with increased levels of mobility of capital, labour and most importantly, consumers" (Marsden 1992; p. 214). To respond to these varied "niche market" opportunities, production is diversified across firms that are no longer part of giant conglomerates that are identified with a specific country of origin, but are part of multinational interfirm networks, which are increasingly able to by-pass State authority at the national level (Bonanno 1991). In other words, as the power of the State to regulate markets declines, diverse networks of firms are expected to increase their ability to develop "market share" in global markets.

The growth in the percentage of non-market transactions taking place on a global scale, which has been referred to as the globalization and consolidation of business activities, has been occurring in food and agriculture (Goldberg 1988), as in other industries. Based on these trends and the theoretical arguments presented above, one might hypothesize that as the direct role of the Japanese government in organizing beef imports into that country was eliminated, that private firms would take the opportunity to enter into that business activity with the objective of changing beef trade with Japan from a form of transaction based on sales between firms with the state acting as an intermediary into interfirm or intra-firm transactions. One might also hypothesize that as firms sought to solidify and expand market shares, that the

liberalization of beef imports into Japan would ultimately lead to a gradual reduction in the number of overseas firms that had access to Japanese domestic beef markets. In other words, one possibility is that the long-term impact of trade liberalization would be an increasingly restricted and controlled market for beef exports to Japan.

3 Oligopolies in the Japanese and American Beef Industries

The contemporary American meats industry is well known for being dominated by a small number of large, multinational firms (Niiyama 1992). In the 1980's, in particular, the same companies came to dominate feed milling and the slaughtering and fabrication of beef, pork and poultry (Heffernan and Constance 1991). This was done not only through business expansion, but also through an aggressive strategy of mergers and acquisitions, a number of which violated the Reagan administration's own anti-trust guidelines (Marion and Kim 1991). Two of the biggest such firms are ConAgra and Iowa Beef Processors (IBP). As of 1990, ConAgra was the 3rd largest food processing firm in the world with processed food sales of $15.3 billion, while IBP was number 8 with $9.5 billion in sales (Gallo et al. 1992). IBP is popularly known in many regions of the United States as an uncompromising, low-price purchaser of fed cattle. It is also an exporter of beef products to Japan, having been active in the export of frozen beef to Japan since the pre-liberalization era. While accurate data on current IBP sales to Japan by market channel are not readily available, reports from various issues of the Japanese meat industry newspaper *Shokuniku Tsushin* indicate that IBP is a major purveyor of imported beef in that country's publicly administered beef wholesale markets. In other words, IBP has been successful at penetrating the Japanese beef marketing system.

Of course, the same tendency towards concentration in meat production can be noted in Japan, although it has not progressed to the same extent that it has in the United States. While vertical concentration in the egg (Sugiyama 1993) and broiler (Nagasaka 1991 & 1993) industries has been established, integration of beef production is not very pronounced. This is due in part to the fact that the Japanese beef

industry is much smaller than the American industry in both relative and absolute terms, and also because the bulk of slaughtering in Japan is still done in government supervised wholesale auction markets and meat centers, which makes it economically less attractive for private firms to enter the packing industry. Nonetheless, the 38th (Nippon Meat Packers) and 50th (Itoham) largest food processing firms in the world (Gallo et al. 1992) are Japanese based, multinational meat processors. While both of these firms have traditionally been prominent in the manufacture and sale of processed meats, both have begun to recruit small butcher shops in Japan into distribution networks as part of a strategy of expanding sales of fresh beef. How effective this strategy will be is as yet unknown, but is an indication of how firms attempt to expand their "market shares" by limiting access to that market to other actors.

The meat industries in the U.S. and Japan are becoming increasingly integrated, i.e. more and more transactions in the marketing chain from production through retailing are being removed from the market place by large firms and networks of firms. Interestingly, Japanese and American firms active in the production and trade of meat products have begun to develop inter-firm linkages with each other in a number of third country settings. For example, Tyson foods has established a joint venture with the Japanese trading giant Itochu and a Mexican partner to establish a joint broiler production facility in Mexico (Tuten and Amy 1987). Nippon Meat Packers, on the other hand, has been importing beef from the U.S., Canada, the U.K., Russia, Brazil, Mexico, Australia, New Zealand, Thailand, Singapore, China, Sweden and Denmark, and operates a joint venture in Thailand with Cargill to produce broilers (Heffernan & Constance op. cit.). Such evidence, when interpreted in light of the theoretical literature reviewed above, would lead one to suppose that as the post-liberalization era in beef trade with Japan proceeds, it would become characterized by competition between U.S.-Japan firm pairs rather than a trade that takes place in an open market between independent American sellers and Japanese buyers.

The data presented in Tables 1 and 2 support this hypothesis. These tables list some of the different inter-firm linkages that have been developed between Japanese, American and Australian firms.

TABLE 1

Japanese Participation in American Beef Packing

American Packer	Japanese Firm(s)	Type of Participation
Washington Beef (WA)	Tokyu Foods/Sun Rex	Ownership
St. Helen's (WA)	Tokyu Foods/Sun Rex	Ownership
Oregon Beef (OR)	Takizawa Ham	Marketing Agreement with C&B Ranch
Oregon Beef (OR)	Yokkaichi Ranch Beef	Ownership
Idaho Beef (ID)	Nichirei	Joint Venture with J.R. Simplot
FBC (NE)	Stamina Shokuhin/Marubeni	Ownership
Harris Ranch Beef (CA)	Nichimen/Fujichiku	Marketing Agreement
Manning (CA)	Zenchiku	Ownership
High Plains Dressed Beef (KS)	Nissho Iwai	Marketing Agreement with Carver
Sanders Key (OH)	Nissho Iwai/Amai	Marketing Agreement
Bras (IL)	Pacific Overseas	Marketing Agreement
Aurora Packing (IL)	Itochu	Marketing Agreement
Liberty Bell/Colonial Beef (PA)	Marudai Foods	Ownership
Hitch Packing (IN)	Sumisho Prime Meat	Ownership
Cattle Exporter (NE)	Ron Bokujyou	Marketing Agreement with O'Neil Packing

Source: *Shokuniku Tsushin.* 1993; p. 26

TABLE 2

Japanese Participation in Australian Beef Packing

Australian Packer	Japanese Firm	Type of Participation
Remu Zabu (QLD)	Hannan	Marketing Agreement
Kilkoy/Mirror Brook /Royal Crown Kilkoy (QLD)	Nagasaki Sangyou/Toshoku Ser. /Sakai Shoten	MarketingAgreement/Joint Venture
Oaky/Stockyard Meat (QLD)	Nippon Ham	Joint Venture with Whyalla*
Deeds (QLD)	Prima Ham and Others	Ownership
Mid-coast/Killara Beef (NSW)	Mitsubishi Shoji	Ownership (70%)
CBP (NSW)	Nippon Ham	Ownership
Ganeda Shire Abbertoir /Ranger's Valley (NSW)	Marubeni/Snow Foods	Marketing/Joint Venture
-OBX (NSW)	-Marubeni	Marketing Agreement
ICM/Berima (NSW)	Marubeni	Marketing Agreement
-Highland Beef (NSW)	-Marubeni	Marketing Agreement
Lackley Meat (NSW)	Hannan	Ownership
-Rockdale (NSW)	-Itoh Ham	Ownership

* Whyalla (feedlot) is a wholly-owned subsidiary of Nippon Ham

QLD = Queensland

NSW = New South Wales

Source: *Shokuniku Tsushin*. 1993; p. 27

The types of tie-ups range from joint management and marketing arrangements to complete ownership by the Japanese firm. In particular, the movement of Japanese capital into Australia immediately preceding and following the implementation of Japanese beef import liberalization has been a major force in the re-development of the beef industry in Australia, particularly for beef bound for Japan (Hattori 1992). Traditionally, Australian consumers have preferred grass-fed beef. Thus, the feedlot industry in that country was virtually non-existent a couple of decades ago. It was only the expansion and eventual liberation of Japanese beef imports that stimulated the creation of a feedlot industry in Australia as Japanese consumers prefer heavily marbled beef, even more heavily marbled that American consumers. Thus, as the Japanese state removed itself from a direct role in beef imports, Japanese firms helped develop a feedlot industry in Australia in order to position themselves in the Japanese beef market.

Two additional observations can be made based on these data. One has to do with the types of Japanese firms that have become active in the American and Australian beef packing industries. Many of the Japanese firms listed are either multinational trading companies (Marubeni, Nissho Iwai, Itochu, Mitsubishi), who pioneered the technological development and integration of the poultry industry in Japan (Nagasaka 1993) and who have a vested interest in protecting their traditional role in managing Japanese imports, or large meat processors (Prima Ham, Nippon Ham, Itoh Ham). Interestingly, these two types of firms appear to be more active in Australia than the U.S., where comparatively smaller Japanese firms are more likely to be found investing (Sun Rex, Takizawa Ham, Sumisho Prime Meat). The second interesting trend to note is that, contrary to what one might predict based on the tie-ups taking place in third country settings, most of the Japanese investments in Australia and the United States are in or with smaller, regional firms, rather than with companies like IBP, ConAgra, or Excell in the U.S. and Gilbertson, Smoagan or AMH in Australia. This confirms information obtained in interviews I have conducted with Japanese meat industry executives, who have stated a preference to invest it or work with smaller feedlots and packing houses in the U.S. One reason often given for this preference is that the

large, integrated meat firms in these two countries are less flexible and less willing to adapt their production practices to meet the idiosyncracies of the Japanese market.

It is important to be skeptical about these data until they can be verified by other sources. Some investments may be unreported, and many of the smaller firms listed may in fact be subsidiaries of larger companies. Nonetheless, it is not improbable that large Japanese firms would be more likely to invest in regional packers. Factors that could be influencing such a trend could be lower entry costs, more flexibility on the part of a regional firm, and lack of interest on the part of a major domestic firm to enter into a joint venture with an outside partner on its own domestic turf. Put more simply, a marriage between a dominant, multinational firm and a regional partner may be easier to manage than one between two multinationals that may find themselves in competition with each other in other product markets.

This leaves us with an intriguing finding. The liberalization of the Japanese beef market may indeed have contributed, at least in the short run, to improved market access for small, non-Japanese firms that have the opportunity and willingness to link up with a large Japanese partner. In other words, the competitiveness of small producers in global markets may not determined by the former's ability to be competitive in a free and open market, but rather may be a consequence of their having the possibility and the flexibility to enter into an inter-firm hierarchy. The importance of being flexible, and of having access to an overseas consumer market through a partnership with a firm that is already established in that market, is further demonstrated by the following case study.

4 American *WAGYU*

Two breeds of cattle account for virtually all of the domestic production of beef in Japan. Approximately two-thirds is fed dairy cattle, primarily dairy steers that are weaned from their mothers shortly after birth. The remaining one-third comes from cattle that are called *Wagyu* in Japanese. This breed is descended from an original breed of cattle that was indigenous to Japan and was mixed with imported European genetics earlier this century

(Longworth 1983). *Wagyu* cattle have a different physical conformation than beef cattle breeds commonly found in the United States or Australia, and are known for a number of peculiar genetic eccentricities, including the ability to marble extensively with comparatively little backfat. This characteristic is desirable as Japanese consumers prefer to consume heavily marbled beef, particularly in dishes like *Shabu-Shabu* and *Sukiyaki*, where thinly sliced beef is boiled briefly before being eaten.

In 1976, four *Wagyu* bulls were imported into the United States. At that time, they were viewed as a curiosity that might be useful for developing a new breed of beef cattle. There was virtually no interest in producing a type of beef that was more comparable to what Japanese farmers were producing domestically. All this has changed as a result of liberalization of beef imports into Japan. There is now an increasing interest among selected producers in the United States and Australia in developing a beef product that is more suited to Japanese consumer tastes and that will hopefully command a higher price than standard quality beef exports. This interest appears to be strongest among comparatively smaller players in the American and Australian beef industries who have difficulties competing against large multinational firms in mass consumption been markets.

This is not to say that large firms have been completely absent from the picture. One of the first and most interested parties that invested capital in the development of an American *Wagyu* herd was a California firm by the name of Calco. This firm not only began to purchase semen, but also became the prime sponsor of *Wagyu* research at Texas A&M University, the first University to do such research in the U.S. Calco also sponsored the development of a herd of F1 *Wagyu* beef cattle with the intention of discovering whether it was feasible to produce highly marbled beef for the Japanese market in an American production system. Calco is a 100 percent subsidiary of Itoham, the second largest meat processing company in Japan.

In other words, one of the major early players in the development of *Wagyu* in the United States was a member of a Japanese based, cross-national, inter-firm hierarchy. As can be noted in Table 2, this firm has also established a beef producing subsidiary in Australia. It's interest in developing a *Wagyu* production system was part of an

understandable attempt by a Japanese firm to gain direct control over the production of an overseas supply of high quality beef for sale in it's domestic distribution network. Interestingly, Itoham's involvement was kept relatively secret, and may have been one reason Itoham operated through a 100 percent subsidiary. There was virtually no reporting of Calco's sponsorship of *Wagyu* in the United States or Japanese media. This is a possible indication of Itoham's understandable desire to keep Japanese beef producers uninformed about their participation in project that could lead to the import of *Wagyu* style beef into Japan.

Calco has since dropped it's sponsorship of *Wagyu* research at Texas A&M. Whether this is an indication that Calco does not feel the project is potentially profitable or a consequence of the current recession in Japan and Itoham's subsequent decline in profits is unclear. What is interesting is that none of the major American meat packers, nor any of the other large Japanese meat processors, have expressed an interest in developing *Wagyu*, while a number of smaller American and Japanese firms have and continue to do so. In the State of Washington, where IBP maintains a quasi-monopolistic market position for fed cattle, a number of small ranchers, a regional feedlot firm, and a local beef packer that is the only significant competition to IBP in the State, are actively engaged in the development of a *Wagyu* production system.

As of 1993, 29 ranchers and feedlot operators in the State of Washington and an additional nine individuals/businesses from the neighboring States of Idaho and Oregon have purchased *Wagyu* genetics for use in local herds. One of the largest purchases, and one of the more aggressive supporters of the project, is the owner of the regional cattle production/feedlot business referred to in the previous paragraph. This firm has developed business ties with a subsidiary of Mitsubishi, a large Japanese trading company that is listed in Table 2 as the majority owner in an Australian meat packer. Also liked into this network is the meat packing firm, Washington Beef, listed in Table 1 as a subsidiary of a small Japanese firm known as SunRex, which in turn has an ongoing marketing relationship with Tokyu Foods, a regional supermarket chain operating in the greater Tokyo area.

The story of Washington Beef and its role in the development of a *Wagyu* pro-

duction system highlights how local ranchers and feedlot operators have a sophisticated understanding of the relationship between markets, power and social networks. Washington Beef was founded by a handful of local feedlot operators who were distressed over the large number of feedlot and slaughterhouse bankruptcies that had been occurring in their region. They purchased a slaughterhouse and established a firm in order to avoid a monopolistic market for fed cattle in the state by providing an alternative to IBP. While they were unable to generate a profit, they were fortunate enough to maintain the operation long enough to find a Japanese firm to buy it. This helped to preserve competition as well as provide an opportunity for local cattle ranchers and feedlot operators to develop strategies, in cooperation with foreign capital, for gaining access to overseas niche market opportunities that large domestic firms were not interested in exploring.

Discussion and Conclusion

The evidence presented in this paper is insufficient for making grand claims about the role of firms in international beef trade and the impact firms have on wholesale and retail prices. Data that can be used to develop and test such hypotheses are very difficult to obtain. Private firms, particularly multinational corporations, are very protective of the information they own about their business transactions. This is certainly one reason why analyses of trade between countries instead of between firms are common, and is one of the challenges scientists face as they seek to research the relationship between firms, hierarchies and markets.

Nonetheless, some preliminary conclusions can be drawn from the above analysis. The first is to verify that it is inappropriate to talk about "Japanese" and "American" goods in international trade. This is as true in beef as it is in automobiles and semiconductors. If, for example, an American based and operated firm with Japanese owners works with local ranchers with Japanese genetics to develop a beef product to satisfy the demands of Japanese consumers, should we consider this Japa-

nese or American beef? More importantly, does it really matter? Soska and Hudson (1990) have written about the need to investigate the relationship between Foreign Direct Investment, competitiveness and local economic development in order to ascertain under what conditions Foreign Investment is locally beneficial or detrimental. The case of *Wagyu* suggests that plugging into a multinational, inter-firm network is a strategy that smaller firms may be using to access markets that are dominated by oligopolistic firms. The possibilities for employing such a strategy may be enhanced in those cases where more flexible production strategies are needed. More research on how such networks, and the small firms within them, fare over an extended time period is needed to determine if such a strategy can be viable over the long term.

A second conclusion to be drawn from the above analysis is that the withdrawal of the Japanese government from an active role in managing beef imports did not lead to the creation of a "free market" in the classical sense. This is the point that the so-called "new institutional economists" (Adams op. cit.) have been making. The *Wagyu* example demonstrates the awareness that managers of small businesses have about the difficulties inherent in being competitive in global markets, which have a tendency to be dominated by multinational corporations. As mentioned above, one strategy that small and medium sized firms may be taking to gain access to foreign markets is to become integrated within inter-firm networks, rather than to attempt to directly place their products in the "free market." This is a particularly important insight for those in developing countries, such as Africa, where the movement to have governments give up their roles in marketing commodities is growing (Manu 1992; Selassie and Hill 1993).

A final issue that needs to be addressed, and one not adequately covered in this paper, is the impact of the development of inter-firm and intra-firm trading networks on producers and consumers. Another assumption underlying many analyses of international trade that needs to be challenged is that retail and wholesale prices naturally move in tandem. "Restaurants and retailers may not change their customer prices drastically on a regular basis because their main concerns are how to maintain or increase their net marketing margins rather than increase their sales

volume" (Mori 1992; p. 11). In related work, Mori (1993) has demonstrated that the wholesale price of imported beef in Japan declined between 30 and 50 percent, depending on cut and source, between 1988 and 1992, while the average retail price for imported beef rose between 1988 and 1991. In other words, the changeover to beef trade liberalization and a reliance on the "marketplace," rather than the state, to determine prices may be creating an environment within which some firms are increasing their profit margins rather than passing along cheaper prices to consumers on a permanent basis.

Firms in the meat industry are becoming more interconnected and involved in directly managing trade across international boundaries. This is hardly surprising given that the same trend is occurring in other industries. For example, it has been noted in the popular press that American computer chip manufacturers are no longer interested in having the Clinton administration pressure the Japanese government to expand their share of the Japanese computer chip market because virtually all of the former now have production and marketing agreements with Japanese counterparts (Harbrecht et al. 1993). What is surprising is that social scientists continue to analyze international trade as if it takes place between countries. This is particularly ironic given that ongoing efforts by national governments to liberalize trade has the effect of decreasing their role in regulating that trade and thus opening up the possibility for large firms to expand their influence by placing international transactions within inter-firm or intra-firm hierarchies. The problem of transfer pricing, wherein overseas subsidiaries "export" goods to parent firms at cost in order to minimize tariffs, is an example of how firms utilize this strategy to their advantage. It is also important to recognize that the advantages large firms have over small ones within countries is more prominent in international marketing and trade due to their access to global information networks and their ability to move capital internationally. These are the "market conditions" that small and medium sized businesses face in the contemporary global economy.

The tendency for firms to internalize economic transactions in inter-firm networks should not be surprising. "The free-enterprise myth notwithstanding, in the U.S. economy, little production is under-

taken in markets where hundreds of thousands of decision makers are responding spontaneously and immediately to prices for output and supplies and contracting and recontracting accordingly" (Adams op. cit.; p. 402). With the diversity of market opportunities that exist on a global scale and the difficulties that are inherent in managing multinational organizations, inter-firm relationships may offer the most reasonable and "flexible" approach to internalizing market transactions in the so-called post-fordist global economy.

Given this situation, the issues facing social scientists is how to develop methodologies to effectively study this process and help local peoples cope and survive in the globalizing political economy. A first step is to more aggressively challenge the assumption that international trade takes place between nations and in open markets. International trade takes place between and for the benefit of private firms that are slowly moving towards establishing more sophisticated forms of inter-firm and intra-firm integration. Only by understanding this process will scientists be able to uncover possible strategies, such as the organization of alternative social and business networks, for assisting local people and revitalizing local communities.

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Notes

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Globalisation, regionalisation and quality: the socio-economic reconstitution of food in the San Francisco Valley, Brazil.

*Terry K. Marsden, Josefa Salete Barbosa Cavalcanti and José Ferreira Irmão**

1 Globalisation - regionalisation in agrarian change

Over recent years there has been considerable efforts made in tracing the significance of new patterns of globalisation in the agrarian sphere (Buttel, 1994; Bonanno et al., 1994; McMichael, 1994). A major dimension to this work has been to examine the construction of what might be called a "third food regime"; given the increasing inadequacies of the earlier colonial and industrial models of agro-food development (see Friedmann, 1991). Such debates have led several writers to question the significance of "Fordist - post Fordist" trajectories (Goodman and Watts, 1994), and the validity of over-arching world-systems analysis in assessing the diversity of food experiences in the late twentieth century (see Arce and Marsden, 1993; Marsden and Arce, 1995). Despite the considerable dissatisfaction with macro models of new agrarian development, and the problems of linking these meaningfully to empirical experiences, it is clear that the new globalisation and regionalisation of agriculture and food is having dramatic social, political and economic consequences in both the North and the South. As such it is creating new challenges and questions about rural development. Moreover, more than ever, it can be argued, it is necessary to link North-South experiences, given the interconnectivities between them as well as within regions and nation-states. These tendencies extend far beyond the effects of GATT, trade liberalisation, or the regionalisation of markets (e.g. EU, NAFTA, MERCOSUL etc.). It involves seeing how these interact with production-consumption supply networks, and how combinations of both shape new forms of uneven agrarian development.

It is not our intention in this paper to critically review this increasingly large literature. Rather, we wish to attempt to

progress what we see as a significant stand of it (following Arce and Marsden, 1993). This concerns the following features:

(i) What are some of the key features and dimensions of these new rounds of globalisation (between North and South) with respect to export oriented agricultures such as fruits and vegetables?

(ii) How and to what extent are they socially based upon networks of relationships and dependencies which transgress but shape regions and spaces;

(iii) What are the effects of these new globalised agrarian relationships for particular regions. Scott and Storper (1986), for example, propose the notion of "a global mosaic of regions", whereby the mosaic stands between a global economy made up of specialised production systems (each with a dense system of intra-regional transactional arrangements), and individual regions intertwined with a world-wide web of inter-industrial linkages, investments flow and population movements.

We aim to examine these broad questions by reference to the case of fruiticulture in San Francisco Valley in North East Brazil . This is a rapidly expanding agro-industrial region geared to both national and international markets. We will argue that it is crucial to relate these broader arguments to empirical cases and to explore the discontinüities between the two in more effectively developing concepts which assists comparative analysis.

2 Quality, regulation and consumption: key concepts in the reshaping of the new agrarian spaces

We and our colleagues (see Arce and Marsden, 1993; Marsden and Arce, 1995), in developing critiques of recent accounts of agrarian globalisation, have placed emphasis upon what might be regarded as the more socialised nature of global and regional systems of food supply and consumption. We have argued for example that:

"*Globalisation has conventionally been stud-*

ied in aggregated terms. However, critical issues, such as the global transformation of agriculture, the new role of international capital, and the increasing differentiation and marginalisation of rural sectors in the Third World, and in advanced economies, cannot be explained by reference to structural conditions, dominant power configurations or ideological irrationalities. This obscures the analysis of social process and action, and it cannot, therefore, explain fully how things may change. Instead, we must examine the interests, actor strategies and the conflict of values of those parties involved in its making. This requires the building of a knowledge base of empirical studies that represents the heterogeneity of the farm-based context and different networks of food. This implies monitoring the changing role of the state, the outcomes of policy dissonance, and the new patterns of agricultural globalisation, putting social actors at the centre of this approach.(p17). "

Implicit in this approach is a conceptualisation of globalisation which involves the differential processes of social translation. That is, global processes have actual translations at different spatial and social levels of interaction. They are not simply imposed upon local populations. Rather, they are constantly internalised and added upon by different actors in networks of relationships. Our particular focus of concern is with actors and agencies in food networks; in the ways in which actors, agencies interrelate, and reinterpret and shape food goods along their networks of supply. Within this socio-spatial and actor-oriented conceptualisation we can begin to identify from previous empirical works the increased significance of the ways in which foods are constructed, not only through the agricultural production process, but also as they flow and deviate through the networks of supply, processing, distribution and consumption. Social actors, whether farmers, marketeers, or distributors, are not just concerned with the quantitative production and shifting of foods, they are constantly monitoring, redefining and shaping the value of them (see Arce and Marsden, 1993). Increasingly then, particularly with concern for the new agricultural export sectors (see Friedland, 1994), the base of social action in globalised food networks is associated with quality, regulation and consumption criteria. These features represent the power of the near-consumer end of food

networks (usually located in retailing, food processing and distribution firms in the North).

However, to say this does not explain how globalised food networks come into being; how they may be perpetuated or adapted; or what the differing local and regional effects of these transactions and relationships might be. In positing these questions we have to begin to look at both the people and the foods in the networks of supply and how these, and particular segments of them, share or allocate power and responsibility; re-locate risk and penalties; and begin to construct international markets and uneven forms of regional development. As Feierman (1990:36) argues more generally: "The wider world is not external to the local community, it is at the heart of the community's internal processes of differentiation."

Relating directly to food networks and agrarian regional development this places emphasis on: a) those key networks of actors and agencies involved in both these processes of globalisation and social differentiation through their actions with foods; b) those substantive areas of concern (e.g. quality, regulation and consumption) which provide the basis for acting in certain ways rather than in others.

The expansion of fresh fruit and vegetable chains during the 1980's and 1990's is of course, broadly linked to the macro political economy of neo-liberalism which has implicated shifts in the agrarian sector as elsewhere (see McMichael, 1994). Latin American and Caribbean countries have, to a large degree, been forced into investing in cash crop fruit and vegetables for export as part of their strategy for securing foreign exchange; placating IMF and World Bank demands, and in generally addressing domestic balance of payments problems. Simultaneously, new agricultural exports from the South have been matched by high rates of consumer demand from the North, mediated through the latter's corporate food sector (see Arce and Marsden, 1993). These producer and consumption conjunctions have been stimulated by a state policy of neo-liberalism. This tends to set the seeds for the privatised transactional networks of supply and consumption (such as those developed in the San Francisco Valley), leaving individual nation-states and their particular regions in a weaker as well as in a more competitive position with each other.

When we begin to explore not so much the overall architecture of these ten-

dencies, in what Friedland calls "the cool chain", but the substance of the relationships and networks within them, one begins to see the ascendancy of new mechanisms of re-regulation, based upon quality of food products. In a situation where "Fordist" or "Keynsian" systems of global trade regulation are diminishing in significance (Marsden and Flynn, 1994), our evidence from the retailing sectors of the North suggest an ascendancy in new (private interest) quality regulatory mechanisms. These have considerable and differential effects. They can affect the location of sourcing; affect the durability and reproducibility of the supply chain, and involve sets of actors and agencies in the construction and provision of quality supply. In addition, whilst the new agricultural commodities have restructured consumption by providing all-the-year-round produce, such that not only were they in the eye's of the consumer 'exotic' (see Cook, 1994) but also more immediately available; they also have been increasingly competitively refined and reshaped to suit different nationally based groups of consumers. Differences in the size, shape, water content, acidity and durability of fruits and vegetables are conditioned by translated knowledges about consumers in different nation states. And these become mediated backwards along the networks to producers and marketing agencies as quality criteria and regulation. These knowledges about quality of foods are embedded into the highly competitive global markets for fresh fruits and vegetables; and, being constantly subject to change and modification, can quite rapidly lead to the abandonment of some producers and marketing frameworks over others. Thus the "new" agro-industrial food networks are both highly volatile both spatially and over time. As a result of this, the often planned and strategic development of agro-industrial districts which are developed (often with considerable initial state support) to compete and succeed in these global networks of exchange, have to withstand and absorb the considerable risks as well as rewards of agro-food globalisation. As we shall see from the substantial case of the San Francisco Valley development in Brazil, these tendencies, and particularly the provision and construction of food quality, gives important insights in the ways in which the new agro-food networks are implicating new forms of regional agrar-

ian development in highly competitive sets of global conditions. In this sense the construction and maintenance of quality foods provides a new basis for spatial agrarian uneven development.

Exploring globalised food networks with regard to the social regulation of food quality, however, implicates others spheres which need to be incorporated. Whilst external pressures to deliver the right size, shape and content of fruit may increasingly dictate the monetary value and hence the eventual spatialised value captured by the producing region:
i.e.

QV = MV / SP

where

QV = shifting quality value of product (which in itself is constituted from the knowledges of external and internal regulators and producers)
MV = overall monetary value gained/ captured in the producer region having produced the necessary standard of quality
SP = Spatial distribution value. i.e. how that value gain is translated and distributed in the producer region.

Internally, within producer regions an increasingly crucial element becomes how quality is regulated, which actors and agencies are involved in the process, and finally, by what means are the specific food quality factors traded-off against other types of quality concerns. Two significant other quality concerns here - as an increasing literature suggests (May, 1995) are those associated with (i) the transformation and value of the labour process; (ii) the transformation and value of the natural environment in which the quality products are grown (see figure 1).

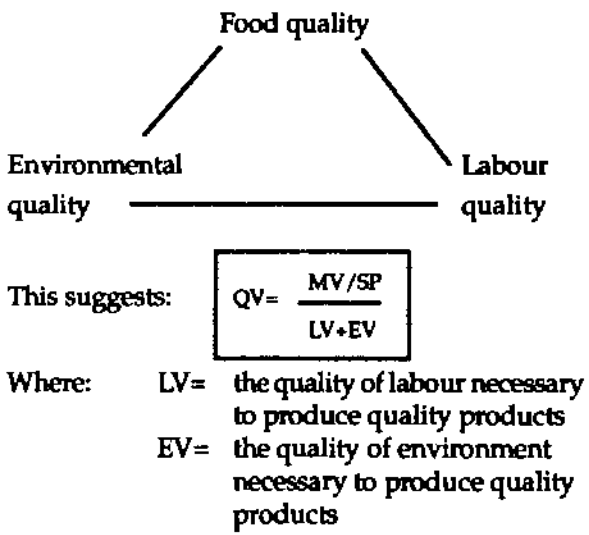

Figure 1: Interactions and trade-offs in the regulation of quality

These are traditionally and in a contemporary sense in San Francisco seen as separate and technically distinct quality concerns.

In the majority the literature thus far the suggestion is that in these latter spheres less value is placed in the maintenance of quality for working and natural environments and greater emphasis is placed on the provision of food quality/ value criteria. This represents the power of the importing agencies and external markets and agents. All three of these spheres have the capacity to be traded-off from each other and all are heavily implicated into the externalised world of competitive global food markets.

As we shall see below, by exploring how actors and agencies are creating and redefining these quality spheres - and particularly in observing how the regulation of food quality is interacting with labour and environmental relations - we will begin to assess how globalisation and regional uneven development begin to unfold as socially active forces. Such an approach necessarily focuses centrally on the social construction of VALUE under globalised and regional conditions, and it does so by significantly problematising value as a socialised attribute, associated with the specific combinations of food, labour and environmental resources in specific places; but under globalised conditions.

In addition, it has to be stressed that these spheres of value construction have to be created and maintained over time if they are to meet various global conditions. Hence they lie at the heart of the social dynamic implicit in globalisation of agro-food networks. After discussing some of the key features of the San Francisco development, each of the sphere of quality construction (i.e. food, labour, environment) will be assessed in turn.

3 The Agro-Food Systems of the San Francisco Valley

The San Francisco Valley is located in Northeast Brazil covering a significant portion of its territory (see figure 2). The San Francisco river which spreads from South to Northeast bathes a vast proportion of the semi-arid lands of Brazil. This paper is written on the basis of a field work carried out on the lower-middle San

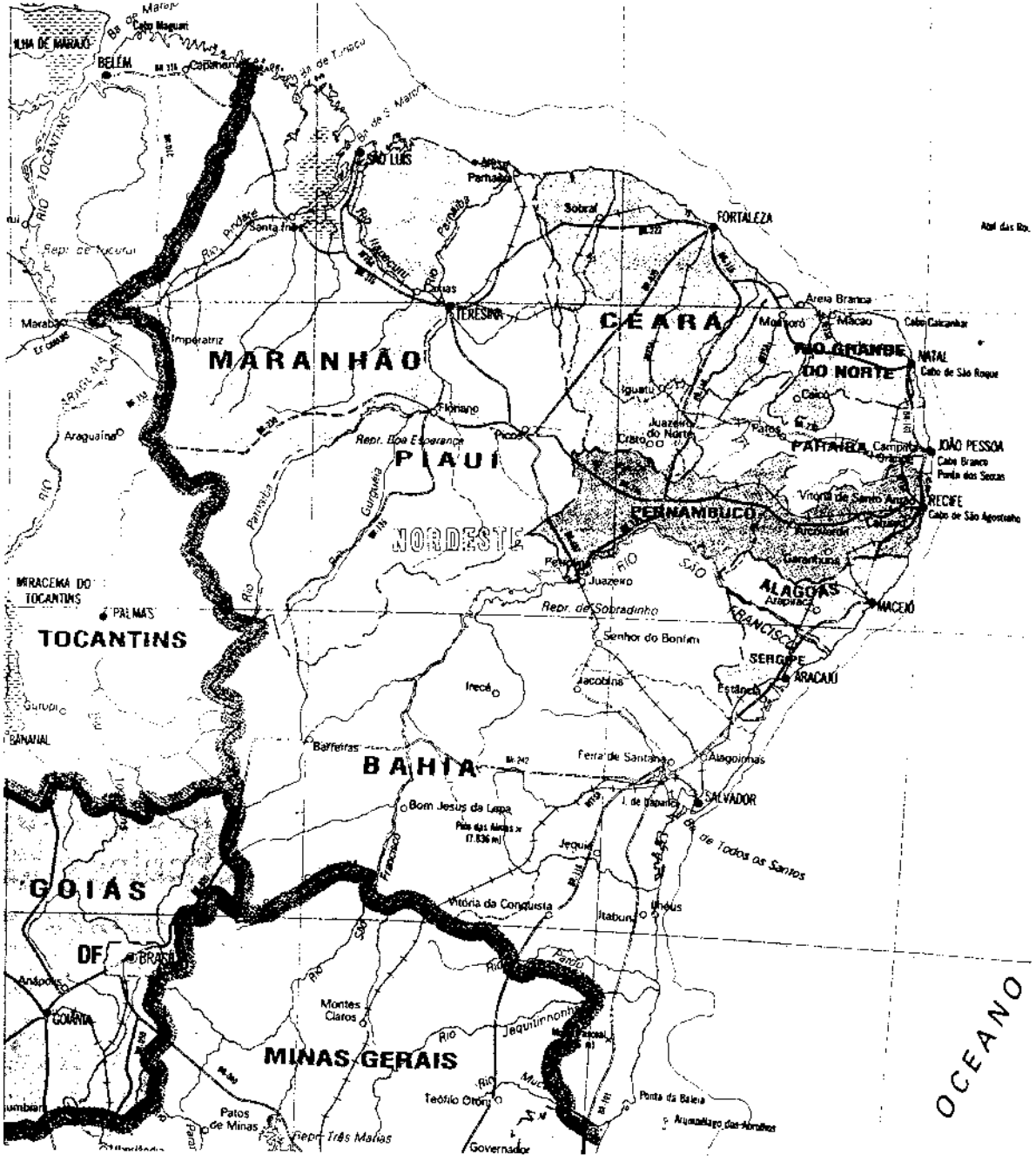

Figure 2: Map of San Francisco Valley

Francisco Valley, in the location of the twin-cities Petrolina/Juazeiro which constitutes the most important agroindustrial district in Northeast.

The development boom of the lower-middle San Francisco Valley is a recent experience stemming from the 1970s. Until this date, the region was dominated by large cattle ranches which historically constituted the strong rural elites of the Northeast Sertao (Chilcote, 1990). The region is located in the drought polygon with a very low annual rainfall ranging from 347mm to 600mm, and an average yearly temperature of 26 degrees centigrade. With a vegetation constituted mainly of scrub cactus, agro-ecological conditions become very inappropriate to agricultural production without the use of technology to transform the natural environment.

The development process was stimulated by the construction of the Sobradinho dam inaugurated in 1977 and it was promoted on the basis of irrigated technology both in public and private projects of production. There are actually six big public irrigated projects with a planted irrigated area of 44,463.57 hectares, and an estimated private irrigated area of approximately the same size.

The agricultural development of the region has been processed on the basis of irrigated agriculture and a few agricultural systems of high valued commercial crops. Irrigation was promoted by state investments in land and infrastructure. State intervention took place under the coordination of CODEVASF - Companhia de Desenvolvimento do Vale do Sao Francisco -, a state public enterprise created in 1973. CODEVASF is progressively passing the management of the projects to private initiatives, as the Cooperatives in the cases of the Mandacaru (CAMPIM) and Bebedouro (CAMPIB) projects and the Agroindustrial District in the case of the Nilo Coelho project.

Originally, the lower-middle San Francisco was dominated by the production of onions as its main system of production. During the 1970s, onions, maize and beans constituted the main system of production under the domain of onions as the main crop. During the 1980s, this structure of production began to diversify in terms of two or three main crops and the systems of production had the following characteristics:

a) onions - tomatoes - watermelon
melons
beans
b) tomatoes - onions - melons
watermelon
beans
c) beans - tomatoes - melons

These were the dominant production systems during the 1980s. CPATSA, the Semi-arid Tropic Research Institute, advised producers to adopt the first system as the most appropriate to the conditions of the region. They constituted a rather specialized agriculture, producing for both final consumer products and raw-materials. At the same time, a few agroindustrial undertakings were installed in the region for the industrialisation of agriculture, favouring a substantial integration between agriculture and industry. Two crops, tomatoes and onions, were the most important crops in generation of income and employment.

In the second half of the 1980s, this structure of production started to change again in view of a disease which affected the tomato system, causing severe losses to heavily invested producers. The crisis opened the way for producers to look for different investment alternatives, and to discover the fruitcrop system as the most appropriate to the conditions of the region. The fruitcrop system was the alternative found by producers to diversify production and recover capital and income losses.

The first half of the 1990s saw the development and growth of the fruitcrop system constituted by a set of crops but dominated mainly by grapes and mangoes. The system is more integrated into the national and international markets, bringing the region into a more sustainable process of development. Tomatoes has recently revived again as an important production system, cultivated under strong technical recommendations, but it has not yet achieved the market value of the end of the seventies. The systems of production which now dominate the actual scenery of the San Francisco Valley are the following: a) Grapes; b) Bananas; c) Mangoes; d) Sugar cane; e) Tomatoes - watermelons - onions; f) Tomatoes - melons - beans; g) Pepper; h) Acerola; i) Goiaba; j) Coconut (see table 1). These systems of production respectively surpass the value of one million dollars a year. Of course, the most important ones are those

whose production value reaches more than ten million dollars a year. Tomatoes still appear as the most important system in view of its spread of production in the region.

The most important production systems are those constituted by tomatoes, grapes, bananas, sugar cane and mangoes. Bananas is a very prosperous system bringing a rapid and sustainable income to producers, both family and entrepreneur producers. Production has been sold completely in regional and national markets. Sugar cane is a special system under the domain of a big agroindustrial enterprise - AGROVALE - which dominates 99.0% of sugar production in the Valley. Technology is thus of a very high level; and productivity has reached the highest performance in Brazil. From the fruitcrop system, grapes and mangoes are the two products which interest us most in the aims of this study by their forms of integration into the national and international markets.

Grapes are produced mainly in enterprise plots (61.0%). Curaçá and Nilo Coelho projects concentrate 77.6% of enterprises in grape production. Family plots production is concentrated in Nilo Coelho and Bebedouro perimeters (97.0%). Family plots have presented a good performance in grapes production in view of the role of family labour in the production process. Their production is being directed almost entirely to the regional and national markets. A few colonos have had access to the necessary technological skills to produce for export, namely in view of quality requirements.

Mangoes is a crop typically of enterprise producers. They control 94.4% of its production in the lower-middle valley. It's production is concentrated in a few big agricultural enterprises, over fifty per cent being located in the Curaçá project. Fruitfort - Curaçá Agrícola e Exportação - is the biggest mango producer in the region. Most of its production is directed to external markets.

4 Constructing Food Quality in new agrarian spaces

The realities of significantly increasing exports, partly through the expansion of irrigated lands but more significantly through productivity increases (see table 1)

have to be conditioned and underpinned by constructing and maintaining specific quality conditions of the fruits (i.e. mango, tomato, grapes and more recently, acerola). The nature of these quality designs and conditions extend from planting to the actual point of human consumption in distant parts of the world. They are not simply associated with achieving the criteria set down by either the domestic Ministries of Agriculture (i.e. EMBRAPA) nor those of importing nations (such as the USDA). Even though these do have increasingly strict criteria - involving on-site inspections - it is important to recognise that surrounding these legal or formal values lie a series of conditions which are set by other external and local agencies alike. The construction of these quality definitions, their implementation and their ability to allocate risks and responsibilities to different parts of the food network means that they play a significant role in constructing and maintaining the fruit supply networks themselves. In highly regional and local competitive conditions where overall aggregate supply becomes less a concern to importing nations than specific design and quality, producers and regional exporters have to be geared to providing a "quality product". Amongst other things, the attainment of increasingly regulated quality criteria become a main vehicle for international market entry. The criteria may vary between importing countries and it may demand different production, packing and quality control treatments. Additionally, at the local level those actors and agencies that can attempt to control these diverse quality forms begin to play a pivotal "social carrier" role in the agricultural region. They become the conduits of globalised quality knowledges, and internally, the gate keepers to globalised market entry for the more numerous and variable producer sector.

Hence, through the allocation of powers and responsibilities concerning globalised quality control, food networks and the markets and strategies which underpin them, come into being and may be maintained. This regulation begins to shape the nature of agrarian development in this agro-industrial region. To sustain themselves as a quality globalised food network the allocation of power, responsibilities, of value risks have to be somehow agreed upon by all the parties involved. If they are not, some producers

Table 1: Lower-middle San Francisco: value of production of the agro-food systems (In US$ 1,000.00), 1994

	Public irrigation projects systems						
	Tourão	Mandacaru	Maniçoba	Curaçá	Nilo Coelho	Bebedouro	Total
Sugar	26,144		506				26,6
Grapes	1,423		4,085	8,201	17,966	8,000	39,6
Tomatoes	1,705		331	640	62,869	163	65,7
Mans. Pass	296		547	37	62,869	163	8
Maize	13		4	6	281	98	4
Melon	1,792	1,361	1,167	122	154	526	5,1
Onions	1,380	464	552	301	328	70	3
Beans	32	49	804	713	6,997	202	8,7
Watermelon	31		1,938	1,778	2,691	204	6,6
Mangoes	126		3,037	10,174	6,297		19,6
Pepper			823	166	1,398	156	2,5
Guava	225		59	22	537	229	1,0
Quiabo	946		39	2			9
Bananas			209	40	28,004		28,2
Abobora					723		7
Sweet Potatoes					382		3
Cenoura					267		2
Manioc					613		6
Acerola					3,117		3,1
Citrus					309		3
Coco					1,554		1,5

Source: CODEVASF. Relatório Anual de Monitoria - Exercício de 1994. Brasília, Abril de 1995

may find themselves excluded from lucrative destinations of their products, or exporters may be unable to convince foreign agencies of the uniformity of their quality management. While the criteria for quality tend to cascade down the networks from the non-local agencies, the risks involved in managing these become more a product of local social and economic organisation.

At the heart of these processes of food network construction then is the differential construction of value through the coming together of different actors, and their knowledges, to produce and shape nature. This produces a major social process. In the San Francisco Valley the gradual divestment of state responsibility for the agricultural development associated with irrigation (under CODEVASF) has been leading over recent years to the growth of large agricultural production enterprises that have developed an export function. Fruit exports can be sold through farm co-operative organisations (such as VALEXPORT), but increasing the scale of the agricultural development in the region has spawned new private enterprises which focus specifically on promoting and gaining entry to export markets (e.g. FRUITFORT, MAPEL). Whilst most of these have initially benefited from the state-supported development projects (e.g. Nilo Coelho) in terms of infrastructure and initial technical assistance, they are effectively privatised firms which control extensive hectares of production and recruit other smaller producers in order to export their products and meet their growing export markets. These large enterprise producers/exporters are located in pivotal positions in the globalised food networks; and their social position in the new and evolving agrarian structures cannot be usefully explained by a recourse to conventional property and labour based social categories (e.g. share-holding, private property owners, petty producers etc. (see Collins, 1991). They can place strict quality control criteria on smaller family producers and balance the proportion of fruit which comes from them vis-à-vis their own estate. In addition, because of their modern packing house facilities they are well placed to translate the increasingly volatile international knowledges concerning consumer preferences, and retailers requirements, concerning the colour, size, shape and content of the specific export

crop. This information is then transmitted to local producers who may have agreed an export contract with the exporter enterprise. As one of the largest exporter firms (with control over 1,015 has of irrigated land, largely devoted to mangoes and grapes) argued:

"Quality control is very severe. We have to follow the product process. We go onto the farm and inspect regularly. ... Nevertheless, possibilities are wonderful. Conditions are good. I cannot see any bottlenecks to this production. We have the most qualified and technological status. In São Paulo they are being eradicated."

This company is currently arranging an export arrangement to Japan, with most of current production going to the U.S. and Europe respectively. By 1994 it exported 1 million boxes of fruit. In 1998 it expects the volume to have increased to 2,5 million.

As well as the degree of arms-length control these enterprises place on their enrolled diaspora of smaller producers, they have to take particular care of the harvesting and handling of the fruit from the trees to the packing houses. Additionally, the **timing** of this process has to be modulated to fit with gaps in market supply of the importing countries **and** the **maturation** of the fruit (e.g. mangoes or grape), such that it reaches the consumers table in the correct condition. This process of **time synchronisation** - not only regarding market entry but also in the maturation and quality of the fruit - is crucial to the continuation of the food network itself. For the exporters and producers alike, a particularly vulnerable "time-quality episode"(Arce and Marsden, 1993) is that concerning **the handling and packaging of the fruit**. Quality and its risks can change with the mobility and handling of the product. Also, big differences can emerge between family farms and large enterprises in this process, which can lead to the rejection of some fruits. One exporting firm had now stopped taking other farmers produce because of this variability in control and the effects it was having particularly on the appearance of the mango. It is necessary to achieve a regulated time period of 23 days between harvest and actual consumption of the mango. The appearance and quality can severely change after 30 days. Most exporters are responsible for the fruits, right

until they are landed in the host country. Also, they may not know, exactly, who the buyers of the consignments of fruit are until they have left Brazilian shores. Dealing with these global contingencies, but at the same time maintaining quality surveillance of the products is the responsibility and major concern of the export enterprise. Moreover, the links in the networks are not necessarily complete nor clear during these critical time-quality episodes. In some cases, the whole network does not always exist at the one time. Rather different time-quality episodes are progressed from farm production, through harvesting, packaging, transporting and distributing the products.

In the production-harvesting-packaging stage the inevitable handling and carrying of products comes with its own risks. As we shall see below this implicates a gendered labour force in different ways. However, within the protocols concerning the limits on pesticide and herbicide uses, the problems of biological risks to the fruits is a real one. In particular, American importers have recently become concerned about the incidence of "fruit-fly" in the mangoes. This has resulted in a more stringent quality control procedure being instituted in the packing houses of the San Francisco exporters. This involves the drenching of mangoes in water and petroleum bees-wax; with the grading process being literally followed by USDA officials who are rotated on monthly intervals. They have to be paid for by the exporter firm. For the European market and packing process there is a more rudimentary system with little checking or external monitoring. It is argued by producers and the exporters that the drenching process will change the inherent quality of the mango, but that the effect of more effectively communicating and signifying safety, standardisation and aesthetic pleasure (the process adds value to the product) ensures the maintenance of the American market.

The example of how one significant importer countries concerns for quality, demonstrate the lack of fixed quality parameters and the point that the fruits can be malleable to different importer and exporter conditions. In addition, it also shows how the different quality conditions influences the labour process, both in the packing house -which also as we see incorporates different grading and

treatment processes- and in the fields.

This suggests that the constraints inherent in the much discussed disparities in production and labour time in agriculture vis-à-vis industry (see Mann and Dickinson, 1982; Mooney, 1985, etc.) are now only one set of social constraints which give fruitculture a distinctive position in modern capitalist agrarian development. The malleability and the sensitivity of many of the products (in this case particularly grapes and mangoes) coupled with the externalised demands for specific quality conditions, means that the management in the food networks of the specific time- quality episodes from harvesting to point of sale provide a significant and distinctive bases for social action and the continual reconstruction of value in food networks. In such regions as San Francisco, where irrigated systems can establish a harvesting pattern which continues for eight months of the year at least, this constant process, of managing and coordinating time-quality episodes is a major and dominant feature of the agro-industrial region and the networks of food which flows through it. Those actors and agencies who are closest to the definition and implementation of quality conditions begin to accumulate power in these food networks. This leads to a growing social and economic differentiation in the region, with smaller producers, not exclusively, but certainly prone to the exclusion of globalised food networks.

5 Constructing Labour Quality

The social and economic processes of quality regulation are far from independent of effects upon the valuation and social organisation surrounding labour and the natural environment. Agricultural enterprises and family farms units tend to organise their production to fulfil the demand of consumers from the North. This contributes to a new set of relationships between the North and the South. The national boundaries are minimised in favour of the power of transnational corporations which are carriers of a global process that may come to introduce changes in the daily diet of the countries involved in it. This creates an interesting relationship between global and local, which are part of a same axis.

Food networks bring closer produc-

tion and consumption sites, naturalising, therefore, exotic foods, by intervention in the production through regulations that define taste, colour, shape and weight that fruits and vegetables have to have. This, on the other hand, comes to introduce changes in the consumption patterns at the local level. If we consider the growth of a class of consumers of imported goods, or at least produced according to international regulations, we may explain the increase in imported goods in Brazilian supermarkets shelves, that indicates a new pattern of local consumption is also being established. The introduction of these problems bring together new questions on the relations between agriculture and new conditions of the international market. Nevertheless, of more relevance to understand are the new forms of sociability created by the articulation between the global and the local by the social actors, in answering to the growing externalisation of demands and decision-making on what, when and where to produce. That articulation tends to transform, equally, the arena of labour, off-setting the traditional division of labour and particularly the sexual division of labour. The need of specialised labour and changes in the agricultural calendar allow for new forms of organisation of production that has to be adjusted to the new consumers demands and holds a strong impact on the types of control on quality of commodities and the labour. Following from this, the level of specialisation of the labour has to be accounted for.

Qualifications for the work to be done emerges as a very important concern for producers in the area. Accordingly, there are changes in the social relations of production; for example, there develops an internal differentiation of producers, indicating that from the inception of the "colono" irrigated plots, up to the present, changes in the market conditions, technology used and new forms of management gave opportunity to newcomers in the agriculture sector. These newcomers are **university educated entrepreneurs**, most of them from Southeast Brazil who came to the area aiming at getting started as a family farm or in a successful enterprise. They understand that they have to have new views on the business to attain competitive goals. Also, there are those farmers who are **agricultural technicians** or **agronomists** who are nowadays included within a new classification of the Valley

producers. Of course, the type of proprietors and or managers of those agricultural units are very important indicators of quality of labour required to assure part of the sustainability and competitiveness of the Valley in the markets (Cavalcanti, 1994b). However, we must account for what is expressed among workers, as well, according to the required specialisation of labour and the new relations in the production (Buroway,1987).

In the study area there is an accentuated gender division of labour, to attend to the patterns of quality of commodities produced; male or female tasks are thus related to certain quality production requirements to make the region's commodities competitive at the international market. The outline of the difference by gender in the work, to use Abreu's (1995) idea, is especially significant theoretically. The flexibilisation as applied to modern enterprises may find in the social division of fruitculture labour, new types of distinctive development. Male and female labour may experience examples of both new and old forms of work and remuneration of labour. This is relevant to understand the foundations of new power relations among producers and workers in these type of activities.

Moreover, the highly specialised labour is necessary to bring commodities to the market standards in a competitive manner. Labour has to be qualified or taught to do right tasks at the right time. This also suggests that they may pursue higher remuneration to that usually paid to non-skilled labour. The workers in fruitculture receive a monthly minimum wage plus 10% for the work done, a result of a resistance movement that occurred in 1994. But, there are other ways by which the workers are paid, as for example, per task, per diem.

Male workers usually do heavy work, such as preparing the plot, clearing up the areas to be cultivated, and all those services to prepare the production fields. Female labour is used as 'favourite' labour in some areas of production such as in the grape fields. It is striking to consider that for the production of 1 ha. of grapes, is necessary to use 200 man-days, and 80 man-days for the harvest and packing, although marked as man-days is in fact female labour. The activities related to the presentation of grapes to the exporters and consumer/markets are, therefore, under the responsibilities of

women. The large use of female labour has changed women's position in the agricultural labour market. It has created an area of work which is considered very specialised.

Additionally, this feminisation process brings with it new views on the role played by women in and out of their domestic units, as well as concerning the relationship between men and women in society more generally. As such, it becomes crucial to analyse changes in the traditional spheres of labour socialisation, given the influence of new ways of living and life styles emerge.

As mentioned earlier in the paper the establishment of the CODEVASF created the background for public projects of irrigation and later for the development of private enterprises. This is the beginning of the transformation of the semi-arid region into an important global "niche" for the production of fresh fruit and vegetables, through the emergence of new networks of food. But it is in the 1980s that this region experienced a deepened change, with the speeding up of the urbanisation process. This is particularly so for the Municipalities of Petrolina and Juazeiro which together have a population of 400,000. In the case of Petrolina, the proportion of urban population to rural population is 75% of the total.

Additionally, one has to consider public investment to make this region workable according to international market requirements. According to the 1994 report of CODEVASF the amount of irrigated area in the SFV comes to 73.000 hectares, 63% of which is occupied by family units of production. There are 7,171 colonos plots, 16 technicians plots and 405 enterprise units. The cultivated area is of 23149,83 ha. in Pernambuco and 29527,97 in Bahia (CODEVASF, Relatorio do Administrador 1994:1, 28- 29). The irrigation schemes have changed the old seasonal schedules of production and labour organisation. The provision of irrigated infra-structure allows for the establishment of an agricultural calendar according to international market demands. This allows for very interesting and complex spatial dynamics in the production timetable as well as in the use of labour. Multiple production time and harvests come to supply jobs all the year around for the local and migrant population. This attracts labour to the area, hired as permanent or temporary workers but largely

residing in the sprawling suburbs of Petrolina-Juazeiro. According to PIMES (1991: 220) the proportion of labour supply per hectare is 6.4 jobs per hectare. Much of this is female labour; responsible for tasks required to assure the competitiveness of the Valley production in the international market. Levels of quality defined by international regulations create patterns of labour specialisation at local level, requiring a qualified labour to fulfil the consumers expectations.

There are some activities which are preferentially defined as female tasks, such as: control of the quality of mangoes for packing, and in the whole production process of grapes, from when the first fruits come out. The participation of women in the viticulture sector varies from 60% to 85%, of the labour in this sector. This is an inversion of the actual proportion of men to women in the Brazilian active population. But is also important to study the social symbols and stereotypes that legitimate the qualification of women to do those activities. For the producers in the area: Grapes are seen to require care, sense of beauty, softness, qualities that only women have.

The women do the following work: *Raleio, Desbaste, Repasse de Desbaste, Pinicagem, Colheita e Pós-colheita*, which are a set of activities, to deal with grapes according to certain rules, to produce a 'beautiful bough' and to follow up that until the last phases before the harvest.

Pinicagem is a later phase of 'raleio', when the fruits are bigger and close to the time to be picked. "Colheita" is the harvest time; also this requires handling the fruits with care; what they call "**pós-colheita**". After harvest time is the packing of grapes according to the required numbers of boughs, weight, colour and aesthetics to attend to the consumers, retailers, export requirements. These are tasks that require not only ability but specialisation. This means control of "timing" and "knowledge" (Cavalcanti, 1994), which are important tools to manage production and markets. The women labourers have to embody these externalised values into their labour practises.

This calls attention to the relative empowerment of women, for to them is left the power of micro quality control. Also, it may create opportunities for new forms of resistance, as the type of remuneration not always takes those skills into consideration. Although labour unions

are not yet well developed, the participation of women as representatives in syndicates has now outnumbered men. Male work, on the other hand, relates to mechanical tasks of viticulture fields, practices of environment management, plague control, by the spreading of herbicides and pesticides, management of water and irrigation schemes; they also participate in the harvest of other commodities such as mangoes. Of course, as analysed by Cavalcanti (1994a), the contingent link with food networks creates a complex division of labour in this area, with the multiple services required to produce and to trade quality commodities in sector being vulnerable and dependent on newly specialised practices of production, packing and transportation.

6 Re-Constructing Environmental Quality

However much the powerful actors in the food networks and markets attempt to commodify food, or the relations of production, time and quality associated with it, our preceding discussion has demonstrated that it remains very much part of nature. This is particularly true when dealing with fruits, for, as we have seen, significant efforts are made to co-ordinate and manage the natural properties of products such that they arrive on consumers tables in particularised and geographically differentiated conditions. They have to be seen increasingly as natural despite the distanciation and complexities they have survived. At the production and exporting segments of the network, environmental conditions are inherently intertwined within this supply system. "The environment" is not some separate or discrete sphere associated with physical conditions alone. Rather as producers and exporters admit, it is an active context in the production of globalised quality food products. The essential 'hybridity' of food is realised at the local level even though some of its features (perishability, environmental intensity) have to be managed through the social organisation of production and labour. In particular, it provides a basis from which our earlier discussion on the derivation of food quality can be built and maintained. Its management (or, reconstruction) is a central element in conditioning who does and who does not participate in globalised food networks.

Within conditions of considerable natural water deficit the development of irrigation has effectively created completely new but considerably vulnerable environmental conditions. The original climax bush vegetation tends naturally towards increasing desertification in the region; with average precipitation of 500 millimetres per annum and evapotranspiration of 2000 millimetres a year. Under these natural conditions, and indeed with the incidence of large irrigated areas, the natural environmental conditions move towards desertification if left unchecked. Within these conditions the irrigation schemes developed over the past twenty years have created nothing less than a new and socially reconstructed micro-climate which allows not only for the production of a range of fruits and vegetables, but increasingly their continuous production all-the-year-around. Indeed, one of the goals of many of the agricultural projects in the region is to achieve productivity gains by evening out all-the-year round production. This increases the intensity of production on particular land areas, and greatly increases production levels, allowing more export market penetration, when other regions are unable to supply export markets. This has recently been the case for the ACEROLA - a high vitamin C fruit seen to have great export potential. By 1994 in the NILO COELHO project, production was based on 500 hectares on a constant monthly harvesting basis.

Agricultural development projects such as these put emphasis upon increasing yields as plants (such as the mango growth over a 5 year period) and through multiple harvesting throughout the year. Under these conditions the lack and preferable absence of natural rain becomes an environmental advantage. For it allows complete irrigated management of crops, completely regulating water supply to the plant. Having created and reshaped an artificial environment, the incursion of the real volatilities of nature (i.e. periodic rainfall volatilities in humidity) becomes a resource burden rather than a gain. It is also seen as an added risk to quality control and products. When the few days of rain do come they can, somewhat paradoxically, upset these nicely controlled conditions providing unpredictable surfeits of water which can damage leaf growth and, eventually reduce production levels. Completely redrawing nature

in this way does not come without considerable risks therefore, and it is well recognised that in order to maintain levels of production- sensitive irrigation, herbicide and pesticide strategies have to be put in place for the system to be maintained over the medium term (see figure 3).

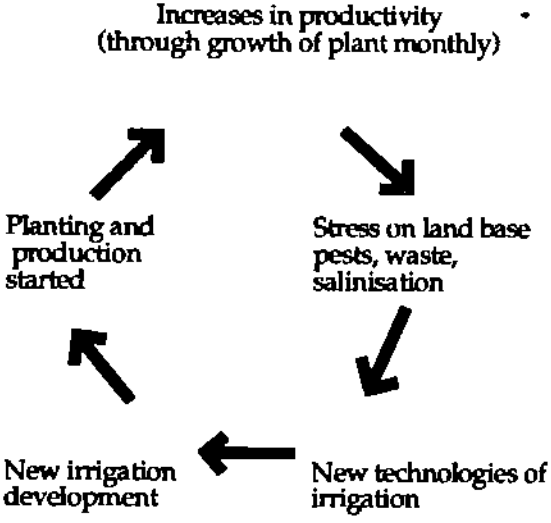

Figure 2 : Cycle of environmental change

Questions of food quality and environmental quality interact directly around some of the risks associated with this superintensive management of the land. To maintain the former the latter has to be constantly and increasingly managed. Because of the recent nature of many of these developments, producers, exporters and development planners are only beginning to recognise these as significant threats to the long term economic and environmental sustainability of the overall agricultural development. Nevertheless, considering some of the earlier agro-industrial developments (which have now been operating for over twenty years) one can begin to obtain an insight into how agricultural management practices have been increasingly attuned to the risks of pests, disease and salinisation of soils, resulting from poor drainage of irrigated waters, particularly on thin soils.

One agro-industrial complex had been established for over twenty years, principally in the production of table and wine grapes for the Southern Brazilian market. It employed over 800 people with 5 agronomists and 25 technicians. It was currently expanding its production to over 600 hectares but it was still dependent upon what was seen to be some of the earlier, more traditional irrigation technology associated with channel irrigation and more undirected forms of water placement. The limits between the types of irrigation management, the incidence of environmental risks such as pest and

disease, salinisation and their consequences on fruit quality are particularly significant in the grape sector. Moreover, susceptibility to these risks and problems cross-cuts scale factors concerning the type and size of farm; and it relates particularly to the types of irrigation technology adopted and the level of care and control over the growth of the crop. For instance, some small family farms (6-10 has) were producing high quality grapes with new spray and sprinkler irrigation systems, relying on almost completely family labour, and packing the products on the farm for the domestic and export market. Our larger agribusiness, however, was experiencing some problems due to the longevity of intensive production. A major problem with the older systems of irrigation has been that there are differences in introducing and directing the water to the grape plant. Increased knowledge about growth rates has revealed that the **timing of water dressings** can influence both quantity of production and quality. The less these timing systems are controlled the more room for deterioration in quality there is likely to be.

A second increasing problem concerns the incidence of diseases in the grape. Vagaries again in the natural weather (particularly high humidity and unstable temperatures) can cause infestation and mildew formation in the plant. On the agribusiness the agronomists argued that this " was a continual battle . A general problem in the valley, especially because of monoculture". It was estimated that this was representing an annual loss of at least 5% of the grape crop despite the targeted application of the government registered herbicides, fungicides, and insecticides (for example, Paraltion, Sumazinia, Tricolorfan and Zuvaim). These losses were down to 1% for those newly irrigated systems, where the water dressings could be better regulated and directed.

Under the new sets of managed (rather than sustainable) environmental equalibria which are necessarily established under such total irrigation systems as those developed in the San Francisco Valley, a major management concern becomes fending off or resistance to news sets of emergent disequalibria broadly associated with the well known risks of intensive and monocultural fruitculture. These trade-offs begin to preoccupy the agronomists and technicians, particularly

on the more established agro-industrial enterprises, and increasingly the small family producers. The emphasis, however, is not to radically question the basis of the super-productivist model of globalised agriculture where new varieties can be tried and tested, and irrigation systems made more sensitive to the regulation and quality of plant growth. Rather, emphasis is on developing new technological fixes which stave off the risks and maintain quality production levels over the medium term. The priorities are to enhance the management of the product, then labour, then the environment, as a hierarchy of quality concerns relevant to sustaining this new model of intensive agrarian development (see table 2).

Type of environmental risks	Main causes	Actors involved	Time frame of effects
Pests, diseases of plants	Rudimentary irrigation systems combined with natural vagaries in humidity and temperature	producers and agronomists	Monthly/ annually
Salinisation of soils and Desertification	Irrigation systems being used on soils without adequate drainage, run off facilities, broken drains, poor management of drainage and /or lack of investment for infrastructure.	Producers CODEVASF	Gradual build up effects long term to effect yields
Breakdown of organic contents of soils	Super-intensive use, year-on year of irrigation and fruit production; application of artificial fertilisers	Systemic	Long term?
Pollution effluents in drainage systems/ pollution of SF river	Intensive application of chemicals, herbicides, pesticides	Systemic	Long term
Modifications in micro climate brought about by increasing extensive irrigation vegetation cover	New vegetation cover with high water content/ increasing humidity and evapotranspiration rates; more micro- climate variability	Systemic	Long term but some indication it is now having effect in terms of humidity and micro rainfall variations

Table 2: Managing Environmental Risk in the San Francisco Valley

7 Conclusions

Overall these environmental risks seem somewhat incidental to the overall drift of the agricultural development. For instance, it is estimated that there are some 500 hectares of salinised soil in the valley by CODEVASF; largely areas where soils are thin. Moreover, it is argued there are, over 1 million square kilometres contaminated with salt. However, simply to focus on the outcomes like this obscures the point that the environmental **risks are having to be managed** day-on-day, and month by month by producers and their technical advisors; indeed, by the food networks as a whole. Hence, there are real management risks to both food quality, and the medium and long term quality of the regional environment. These risks have to be managed and acted upon in the context of globalised food networks which place a logic of competitive quality production onto producers and on the region as a whole. Producers and exporters have to compete with each other for market entry, the region has to compete with the fruiticulture regions of Chile, Mexico, etc. to supply the larger proportions of their produce. In this sense the actors and agencies involved in fruitculture in the region have to balance, trade off, and **construct strategies** for managing short-term quality demands from importers on the one hand, and environmental risks of intensive supply systems on the other.

Exploring the actions of these actors and agencies, embedded as they are in these globalised food networks, demonstrates how they **have to become a part of nature.** That is, a part of the process of making quality foods and specific quality environments. Hence the making, manipulating and modifying of nature, through the foods and networks themselves and the environments in which they are fostered and nurtured, provides the life-blood of the new agrarian spaces of which the San Francisco Valley represents.

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Collective Efficiency: *MEZCAL* Production and the Clustering of Small Firms

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1 Introduction

During the past decade, the Mexican economy has gone through a stage of unprecedented change accompanied by thoroughgoing transformations at the societal and political levels. These dramatic changes are undoubtedly related to the complex interplay between the major restructuring of world markets and the concurrent upsurge of neo-liberal policies on a worldwide scale. In Mexico, this transition parallels similar processes presently taking place in core Western economies. To mind come the rapid and radical changes in production technology and industrial organization of some key sectors and the ensuing changes in economic management policies at international (NAFTA, GATT), national and regional levels. Other examples would include the rise of new production spaces in hitherto unindustrialised areas; forms of regional development not any more based on Fordist mass production techniques; the relative expansion of manufacturing activities based on less rigid and more highly adaptable (i.e. flexible) technologies. Other, less virtuous transformational effects are the socially speaking costly processes of de-industrialization and decline of some manufacturing regions and the virtual collapse of smallholder agriculture.

Analogous to these trends is the enormous growth of small-scale enterprise in urban and rural areas. As a response, the Salinas Administration launched a number of large-scale programs that pretended to increase the competitiveness and productivity of the micro, small-scale and medium sized enterprise sector. In fact, the most important government programs under the Salinas administration concerned the creation of alternative income possibilities[1]. With the new policy the government expects this sector -by far the largest employer- to contribute to industrial reconstruction, especially because small-scale enterprise promises to adapt flexibly to the new conditions of international competition.

Considering this situation, it is remarkable that the research community has been slow in responding. Although there is a good deal of literature on the subject, there is a particular dearth when it comes to understanding small-scale economic activities from new, promising perspectives. One such perspective is that offered by innovative work on 'flexible specialization' in advanced countries (Piore and Sabel 1984). In a nutshell, flexible specialization may be defined "as a technological paradigm or ideal-typical model of industrial efficiency: the manufacture of specialized goods using flexible machinery and skilled labour" (Hirst and Zeitlin 1991:2). The model was used by Piore and Sabel to contrast it to Fordist mass production in which mass goods are produced using standardized machinery and unskilled workers. The concept of flexible specialization has been used in the context of the debate on industrialization in the heart of capitalism itself, particularly in small firm industrial districts of the Third Italy (Becattini 1989; Brusco 1990), Germany (Häusler 1992) and Japan (Dohse et al 1986), where small enterprises have shown their economic strength in times of crisis. The general argument is that the strength of small-scale enterprise there cannot be comprehended by examining individual firms. Rather, their vitality lies in clustering and cooperative competition, the effect of which is shown by an increased ability to adapt and innovate.

It is not the aim of this paper to discuss the at times elusive model of flexible specialization[2]. However, I will borrow two instruments from its conceptual toolbox - 'clustering' and 'collective efficiency'- in order to explore their potential contribution in understanding the role of rural small-scale enterprise in the regional development of underdeveloped economies. Using both concepts, in the next pages I will illustrate one instance of regional development in the State of Jalisco in Western Mexico that has recently been fuelled by a number of firms engaged in the production of mezcal (a distilled spirits made from agave). I argue that the relative success and expansion of these firms in the otherwise "poor" agricultural landscape can best be understood by the efficiency and flexibility gains ensuing from their sectoral and geographical concentration. Although such opportunities do not necessarily follow from clustering, geographical and sectoral concentration in this case

encourages inter- and intra firm division of labour as well as product specialization; the appearance of input suppliers and parties providing new and second hand equipment and spare parts; a rapid supply of products on short notice; the arrival of distributors willing to sell in both national and international markets; specialized financial and accounting services; and the emergence of a pool of skilled labourers.

In the next two paragraphs, I will provide a short overview of the intricacies of mezcal production against a historical background. In order to support my argument, in the third part I furnish some evidence of the efficiency and flexibility gains resulting from the webs of inter-firm linkages between mezcal producers. This is followed by a brief statement on the importance of borrowing the concepts of 'collective efficiency' and 'clustering' from the flexible specialization approach in light of more general issues of regional development in Third World contexts.

1 Mezcal - historical overview[3]

There are no records of the existence of distilled spirits in prehispanic Mexico, and there is widespread agreement that the process of distilling already fermented beverages such as mexcalli or vino mezcal (made from the heart of the mezcal agave) was introduced by the Spanish conquerors in the early 16th century. At the beginning of the 17th century some hacendados in the immediacy of Guadalajara were known to produce distilled mexcalli for their own and their labourers' consumption. However, it is not until Guadalajara becomes a regional center (around 1650) that vino mezcal is produced for commercial purposes. From the Conquista to roughly 1650, producers, traders and consumers of vino mezcal had to put up quite a fight against a series of prohibitions and restrictions that ranged from hefty fines, to jail sentences and even the death penalty for whoever was found drunk upon arrival at certain colonial cities. The latter was the case in the city of Colima and some districts of the coast of Jalisco and Southern Nayarit where early colonialists were engaged in war with the Colimotes whom they tried to "pacify". Despite the penalties, evidence suggests

that from the middle of the 16th to the middle of the 17th century, vino mezcal was being produced at an ever larger scale. Most consumers were neo-Galicians and criollos for the local population liked pulque[4] better. By then -probably for tax reasons- a legal break for both producers and consumers of the well-liked beverage was provided by creating an estanco[5] in which all liquor entering the gates of Guadalajara had to be sold. Many municipalities, however, protested heavily to this measure because the estanco was the only one in New Galicia -a centralizing move that effectively prevented these places to levy taxes[6].

The actual boost in the production of vino mezcal, however, does not take place before the start of the 18th century when the northern part of Sonora, Baja and Alta California were "pacified" and opened to colonization by the jesuits Kino and Salvatierra. Slowly a market developed, with Guadalajara as the natural supplier. This market grew significantly after 1767, when all jesuits were expelled from the Castilian Empire and opportunistic friars such as Junipero Serra expanded the Spanish and Franciscan jurisdiction all the way to San Francisco. Trade increased by the middle of this century between New Spain and the Philippines, with both Acapulco and San Blas (Nayarit) as important harbours for valuable goods in transit to Veracruz and Cádiz in Spain. These developments certainly opened new windows to the world for Guadalajara, and by 1800 the city was a major trading center communicating the Philippines, Upper and Lower California as well as Northern Mexico with Spain. A further boost for trade in Guadalajara occurred during Independence War (1810-1821). The leader of the insurrection, Morelos, dominated the Southern coasts of Guerrero, and all Eastern commerce was detoured from Acapulco to San Blas.

Vino mezcal became an important byproduct of this trade. Especially those Alcaldías where the liquor was produced and that lay on the trading route (Tequila, Amatitán, Ahualulco) fared very well. The vino mezcal from this area also became widely known in Mexico City, where it was preferred over cheaper vinos mezcales from Oaxaca and San Luis Potosí. Willing to profit from tax revenues, the colonial Administration opened two more estancos in Sayula and Colima, both on the road to the alternative harbour of Manzanillo. The

vino mezcal in these cities, however, came from the relatively nearby towns situated in the region of "El Llano" (Tonaya, Tolimán, Tuxcacuesco and San Gabriel). In time, vino mezcal reaching Guadalajara and Mexico City became known simply as "Tequila" -its place of origin. Similarly, in Colima vino mezcal was (and is) known as "Tuxca" (from Tuxcacuesco) in the vernacular. In other areas vino mezcal is simply called mezcal[7].

Mezcal never profited from an expanding market the way tequila did. Because of the remoteness of their location -which in some cases lasted until well into the twentieth century- mezcal producers never manufactured much more than was consumed in their haciendas. The secret of distilling was passed on from father to son, to the extent that even nowadays most producers are directly related to the former latifundistas. With the exclusion of the producers from Tuxcacuesco, mezcal rarely passed the gates of the hacienda and, probably because of the scarcity of it, this mezcal soon acquired the reputation of being of exceptional quality. It is still recalled that traders (arrieros) were awaited with great expectation in Sayula, Zapotlán (now Ciudad Guzmán) and Colima if it was known that they had paid a visit to one of these haciendas. Commercial production, however, took off only recently. There may be many reasons for this, but two are the most commonly expressed. The first involves the appearance of bogus producers who, perceiving the great demand for the product, started fabricating cheap, bootleg imitations of inferior quality. Customer dissatisfaction was the outcome, and the market collapsed. Another reason often cited was the construction of the Guadalajara-Autlán road in the 1950s. Traffic between these two cities used to pass through Sayula and Ciudad Guzmán which were relatively close to El Llano. As the new road was built over Autlán to the West, old and regional trade centers such as Sayula and San Gabriel (the gravitational centers of the El Llano communities) lost their relative importance. With them, the local mezcal market also diminished.

This situation was altered when a new, paved road was built between Autlán and Ciudad Guzmán in 1974. With the road, local caciques (who intensely objected against it) lost some of their power as the local population of these isolated areas was suddenly able to buy cheaper agricultural inputs and obtain higher prices

for their products. This meant more cash in these communities, which in turn had a positive effect on mezcal demand[8].

3 Mezcal - the production process

Mezcal production has since expanded enormously, and presently the product is sold in both national and international markets[9]. On first sight, mezcal seems to be a quite straightforward product to elaborate, with a low entry threshold for would-be producers. In principle at least, mezcal is obtained from the agave plant. The plant material is harvested after a growth period of some 10 years (jima). Once harvested and undone of its long, pointed leaves, the mezcal hearts are transported to the distillery (taberna), where they are piled into a crater-like hole in the ground which is half full of burning charcoal covered with stones. The hearts are then covered with earth and allowed to "cook" slowly (72 hours) in order to convert its sour juices into sugars. Once uncovered, the plant material is threshed in a mill and the fibrous material (bagazo) is left to ferment in a tub for around 6 days. The brownish, fermented liquid is then boiled in a cauldron and distilled through a still (alambique). After distillation the liquor can be aged in oak barrels to obtain a better taste, bottled and sold.

What seems to be a relatively straightforward process, however, incorporates an extremely complex blend of decisions that can be taken at any point of the production process. For example, the growth period of the agave can be shortened without quality losses through the use of fertilizers or by a careful selection of the soil[10]. The first possibility entails higher production costs; the second option entails a very wide network of ejidatarios and pequeños propietarios owning land of differing soil conditions and willing to rent or sharecrop for a relatively long period of time. A third possibility is to buy plant material from Los Altos and Tequila[11], which in turn presupposes the right connections for agave demand is higher than supply. Decisions affecting the quality of the final product surface over and over again: fermentation can be boosted through different means[12]; the amount of the final product can be increased by adding 96% alcohol to the boiling cauldron; taste can be altered with both natural and chemicals

compounds, and so on.

In fact, these crucial decisions have in common that they are based upon a specific, localized knowledge of the technical, socio-cultural, political, economic and ecological elements involved. This body of knowledge, which in the end is traduced in a specific form of enterprise organization, is clearly not open to just anybody. Hence a relatively small number of producers are presently concentrated in a relatively small geographical area that comprises the municipalities of El Grullo, Tonaya, San Gabriel, Tuxcacuesco and Tolimán. Out of a total of 27 producers, 21 have operating permits and 6 distil mezcal illegally (that is, they are not registered). Apart of these producers, there are some 5 to 10 resellers who "baptize" most of the mezcal made by illegal producers (and some of the legal ones) by bottling the product and providing it with their own sticker. Most producers make more than one brand of mezcal, and each brand is offered in a variety (three to five) of "qualities" and prices. The size of the enterprises, as well as their output, varies greatly: whereas the owner of the smallest illegal distillery obtains 200 liters of mezcal every so many weeks and employs only one casual labourer for harvesting, the largest firm has an output of 30,000 liters a week and 58 labourers on the payroll (most of them women at the bottling and packaging plant), not including 3 secretaries, a lawyer and an accountant. Three producers are presently exporting mezcal, and others are willing to join the lucrative export market as well[13].

4 Collective efficiency

A casual conversation with a mezcal entrepreneur would indicate a sector in which harsh competition, hostile jealousy and backward mentalities are commonplace. So, for example, it is not uncommon to hear entrepreneurs complain about the 'traditionalist spirit' of fellow producers who mix up all sorts of business (including their distilleries) with family matters and hence seriously constrain the development of the sector. Gossip is also out that the mezcal fields of one of the bigger producers was set afire by an envious competitor only some months ago. Producers consciously hold this revanchist attitude as responsible for blocking the unity so much

needed to lower fiscal, financial and marketing risks eg. through direct, collective negotiation with Hacienda, banks, or wholesale purchasers. This lack of solidarity is also blamed by some as the prime reason for the sometimes enormous quality variations which, in turn, are potential causes of customer dissatisfaction.

Yet, a closer look reveals that quite the contrary is the case. Indeed, the circumstantial association of mezcal producers that is derivative of their sectoral and geographical agglomeration has brought into being a developmental process characterized by progressive externalization of production and distribution. Whereas the "traditional" producer tried to keep direct control over his business by offering only one product, owning his mezcal fields, utilizing self-made implements and machinery and having his own distributors, today producers tend to specialize and fragment the production process. So, for example, specialization is evident by the fact that producers -most of whom engage in a number of other, unrelated agricultural activities and animal husbandry- are selling their grazing and arable land as well as their mezcaleras (agave fields). This strategy has allowed producers to invest in the modernization of their distilleries[14]. As a consequence of this land-use modification, new rent contracts as well as changing labour and sharecropping relations are emerging between mezcal producers and ejidatarios with formerly idle communal land. Apart of this type of specialization, all distillers have diversified their products in terms of appearance, quality and price, thus catering for different types of consumers in different markets. In their quest to reach new consumers, some distilleries have recently started producing two, three and even four different brands of mezcal, with each brand coming in different price (and quality) ranges.

The fragmentation of production has gone hand in hand with a technical and sexual division of labour at the inter- and intra firm level. With the exception of some illegal distillers who perform all productive and distributive tasks themselves, all mezcal firms have separate distillation, bottling/packing and distribution units, while the larger firms also have their own plantation and administrative departments. But for the small illegal ones, all firms employ skilled, unskilled and semi-skilled labour. Skilled personnel is contracted for administrative tasks and spe-

cialized workers manage the actual distillation process; semi-skilled work is utilized for the jima (harvesting) of agaves and the distribution and selling of mezcal; unskilled labour is used mainly for bottling and packaging purposes. The latter, with few exceptions, are women. On-the-job training is provided only in the administrative and distillation departments, while semi-skilled work is learnt quickly by casual labourers accompanying more experienced ones. Upward mobility does exist, but is confined to the skilled and semi-skilled categories. Unskilled labour is generally contracted on a casual basis, and only few of them enjoy any social benefits (social security, SAR[15], INFONAVIT[16]).

The collective gains of an inter-firm division of labour can be exemplified by the fact that producers may buy mezcal in bulk from one another when, for a variety of reasons, they cannot meet consumer demand. The flavour and the alcohol content of the unbottled liquor is then "corrected" by mixing it with their own or by adding artificial flavouring, alcohol and water to it. Then it is bottled and provided with the brand name of the end producer. Clearly not all producers engage in this practice. The larger manufacturers help each other out only when there exists a good relationship, but smaller ones (as well as all illegal distillers) partly derive their right to exist through their specialization as maquiladores (contract distillers) for one or more of the larger firms. This incipient division of labour between larger and smaller enterprises also benefits the latter. Larger producers, for example, may buy a truckload of jerrycans of 96% alcohol at wholesale markets to be used later in the mezcal distillation process. Although they may not need all of the alcohol at once, buying in bulk is advantageous to them because it lowers transport costs. Small producers in turn buy modest quantities from them (5-10 jerrycans) and end up paying a much lower price (sometimes as much as fifty percent) than they would if they would stock with local merchants. Other, more "illegal" forms are also employed, for example when a large customer asks a distributor of brand X to bring along a certain amount of the competitor's mezcal on his next visit. In order not to disappoint the customer (or not to give away his location by placing the order directly with the competitor), the distributor may pass the order to his boss. The producer then "steals" some stickers from the competition (by ask-

ing, for example, a female employee to procure them through a sister or a relative bottling for the competitor), gums them on his own plastic bottles (which are of standard size and form), "corrects" the taste according to his notion of what the competitor's mezcal tastes like, and delivers. One and the other have the effect of creating a productive structure from which all profit, and in which the delivery of mezcal in near and far away markets can be met at short notice and at great speed.

Together with this division of labour and product specialization, mezcal production by these clustered small-scale enterprises has seen the emergence of networks of suppliers of raw materials, intermediate products, and producer services. So we have, for example, middlemen selling agaves from the Tequila and Los Altos region. Taking advantage of the presence of many producers concentrated in a relatively small geographical area, these middlemen do not risk being left with an unsold perishable product since they have the virtual certainty of there always being a buyer. This, of course, lowers costs for mezcal producers who would otherwise have to pay for individual transport of agaves. Other important suppliers include three specialized water purification factories of El Grullo which, having soft lime water ideal for the fermentation process, send daily tankers to neighbouring Tonaya and Apulco at a fraction of the cost involved for an individual producer wishing to dig deep wells 500 feet deep. Similarly, there exist different producers of plastic and glass bottles catering specially for the mezcal sector. Here too, distillers profit from relatively low prices as a consequence of the economies of scale involved for bottle producers able to plan ahead and send only full containers. Likewise there is the emergence of a supportive network of specialized producer services. The list of services includes specialized repair and maintenance shops, accounting offices, fax and photocopying facilities, notary public, business and financial planning, legal advisors, and tax and financial services. These services, which are often shared, would otherwise be unaffordable for the smaller firms.

A related advantage of clustering is that it encourages a quick diffusion of innovations, know-how and skills. The distillation process, for example, has evolved from a relatively straightforward design in which vapours emitted from the wood-fuelled copper cauldron condensed against

a wooden plate hung above it to collect the mezcal, to more technologically refined propane boilers serially connected to stainless steel fermentation tubs through automatic bypass valves, stills and a complicated set of filtering devices. Although not all distilleries are equally developed, know-how and the skills necessary to operate the more sophisticated machinery are widely available. This is so, in the first place, because the diffusion of know-how and skills is directly related to an external agent: the highly technified producers of tequila. As I mentioned before, mezcal and tequila are nearly identical products, and innovations in one productive sector quickly find their way into the other[17]. Diffusion is facilitated by the fact that most personnel in charge of managing the distillation process has had prior experiences working with tequila companies. In the second place, successful innovations are quickly appropriated by others either through direct advice from the original developer, by way of gossip, or through the continuous switching of distillery personnel from one producer to another. The quick diffusion of innovations, know-how and skills -apart from reducing the technological gap between firms- effectively increases the ability to react to market changes. For example, when two years ago sales of quality mezcal plummeted, one producer quickly reacted and successfully started selling his liquor in the same bottles he was using for export purposes. Within a year, five fellow producers bought second-hand, rudimentary bottling machines and multiplied the sales of their quality mezcal as well.

What has been said earlier (division of labour, specialization etc.) about collective efficiency is not the automatic outcome of mezcal firms being clustered. Running through this process of development are sets of social relationships between producers and their workers, distributors, suppliers and formal institutions such as ejidos. Equally, the inter-firm linkages that conform the cluster owe their existence to relations among producers -some of whom are compadres or relatives. In more theoretical terms, these specific networks of actors provide the conditions for a productive model that is very similar to what Piore and Sabel identified as flexible specialization. However, Schmitz (1990), in the context of a critical appraisal of Piore and Sabel's concept, asserts that what makes their model tick are institutional factors at

the local and macro level. These institutions, and especially local government, provide a proper environment for the industry in question and are regarded as essential to the flexible specialization model by directing competition towards innovation -a condition that is generally not met in LDC's. Indeed, in the case of mezcal the expansion of production through collective efficiency owes little to local or extra local institutions as such. In fact, the institutional environment has not been supportive but rather discriminatory. On the macro side, for example, we have that import substitution long maintained closed markets, thus increasing the price for a number of inputs such as glass bottles. Another case concerns the 44% of IESP taxes *(Impuesto Especial Sobre la Producción)* which consumers have to pay for hard liquor, cigarettes, and gasoline and which makes potential customers take a beer before they consider buying a bottle of mezcal[18]. Likewise, banks have officially not been eager to support this activity[19], and specific Chambers such as that of tequila producers have closed the door on them (the local CANACO -membership whereof is compulsory- has accepted them but does little for its affiliates). Neither is there a formal association to deal with local, regional or national governmental institutions.

This is, however, the formal side of the story. Once one "deconstructs" institutional agencies and sees them for what they are -organizations of individuals having their own projects and practices, and operating within broad and flexible policy guidelines- the picture that emerges is somewhat different. So, despite a discriminatory formal environment, producers have been able to find credit for their activities, have found a way to defend their interests by mobilizing local and regional governments, and have succeeded in stemming the Chamber of Tequila Producers in their favour. For example, some producers have succeeded in 'manipulating' the system by obtaining soft BANRURAL credits originally intended for agricultural or animal husbandry purposes. By the same token, they have easy access to municipal operating licenses, and may even count on a 'helping hand' when it comes to sanitary, labour or tax inspections. Likewise some of them have managed to procure alcohol at all times -in Jalisco virtually an impossibility for firms not registered at the Chambers of Tequila Producers or Alcohol Producers[20]. The success of producers can only

be understood by the relations they engage in with willing actors of formally unwilling institutions. These transactions are often based on kinship and compadrazgo relations, but also reciprocity is involved, as for example when a producer provides (for free) all the spirits necessary for parties or political manifestations of important CNC leaders, regional delegates or higher officials.

5 Conclusion

In this paper I have utilized the notion of clustering and collective efficiency to capture a form of productive organization definitely in existence. In the example of mezcal, a historical and gradually increasing division of labour has set in motion a flexible type of manufacture. This flexible and viable form is characterized by externalization or the fragmentation of the production process into a multiplicity of individual producers, suppliers etc., thus enabling rapid changes along the network of vertical and horizontal relations and in turn facilitating quick shifts in output level. The emergence of such a form of production is obviously relevant for a number of reasons. For one thing, in this paper the appearance of incipient industrialization through collective efficiency is not dependent upon technologically sophisticated machinery or inputs. This is important because craft production (as opposed to Fordist mass production) is widespread in Third World countries, and especially in rural areas. Second, the progressive productive externalization of small-scale, flexible production forms create important backward and forward linkages (Hirschman 1981) that may bolster economic recovery and income generation. Finally, small, flexible networks of firms can act and react more swiftly to the disruptive circumstances characteristic of LDC's than rigid, large-scale industry -especially in the context of the globalization of the world economy. A word of caution, however, is on its place here. Small does not necessarily mean beautiful. The fact that clustering, as in the case of the mezcal producers of Jalisco, has brought about collective efficiency in the form of a flexible form of production must not blind us for similar or dissimilar historical situations that point in another direction[21]. Likewise, flexible organization of production in the form a progres-

sive externalization of tasks locates crucial areas of decision-making outside the firm, thus raising questions about power differentials and asymmetrical inter-firm relations. Clearly the debate on flexible specialization and its applicability in underdeveloped contexts is new and in need of much analytical refining. I hope that the empirical evidence shown in this paper contributes in some way.

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Notes

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1. This is evident if one considers the recent change of focus of the official *Banca de Desarrollo* (Development Bank). Up to 1993, this Bank channelled resources to the agricultural sector through BANRURAL and FIRA; from 1993 onwards, the Development Bank directs most of its capital through *Nacional Financiera* (NAFIN) and the *Banco de Comercio Exterior* (BANCOMEXT) in an all-out attempt to make competitive micro-, small-, and medium-sized enterprises. To give an idea of the dimension of this endeavour: until 1993 all credit for the more than 2,000 *paraestatales* (government-owned enterprises) was disbursed through NAFIN. The amount credited to the former *paraestatales* is now being channelled to micro-, small-, and medium-sized firms, and is being financed by the surplus on the national balance of payments obtained through the sell-out of nearly 1,000 state-run enterprises during the Salinas Administration (including the largest company in Latin America, TELMEX, as well as 18 commercial banks).

2. Flexible specialization embraces both large and small-scale versions. The large variant entails decentralization and new organizational techniques, while the small-scale version results from the network or cluster of vertically or horizontally linked small firms (Morris and Lowder 1992). Schmitz 1990; Rasmussen *et al*, 1992).

3. This part draws extensively on Muriá (1990).

4. A fermented beverage obtained from the heart of another type of agave.

5. Outlet store under government supervision.

6. This collection of taxes through the sale of (above all) vino mezcal was no triviality. For example, by 1672 the Governor used the tax money obtained from vino mezcal to alleviate the water shortage by paying for its transport from Chapala. Another example is the magnificent Palacio de Gobierno (one of Guadalajara's most impressive colonial monuments) the first half of which was built with mezcal money coming from the *estanco*. The second half was constructed with other resources. In 1785, in order to support the export of peninsular spirits, King Carlos III prohibited the production of local liquor. This prohibition was partially lifted in 1795, five years after the completion of the building.

7. It took some time though before these differences in name became officially acknowledged. By the beginning of the 20th century, nearly one hundred years after *tequila* was a burgeoning term, official statistics still referred to both *tequila* and *mezcal* as *vino mezcal*. Today, *tequila* is widely understood to be a different product than *mezcal*. This difference is mainly based on the deodorization process of *tequila* by which it looses the somewhat harsher flavour characteristic of *mezcal*. In their respective production areas, however, confusion still exists as both *tequila* and *mezcal* are simply referred to as *vino*.

8. Some of the producers also opposed the road as they feared that with it, the State (taxes, quality control) would arrive.

9. In Mexico mezcal from El Llano is distributed in the states of Jalisco, Colima, Aguascalientes, Guanajuato, Zacatecas, Michoacán and Nayarit. In the U.S. it is sold in Washington, Oregon and California.

10. Right texture, right slope, not too much shade, etc. In short, the right micro-climate. This however is in itself a complex matter because there exist some 15 different varieties of agave that can be utilized

in the production of mezcal -each adding a peculiar taste to the liquor and each demanding different soil conditions.

11. The agaves from these regions have a higher sugar content than the varieties found in El Llano (this is traduced in more mezcal per kilogram of agave). However, the milder taste of the former is not found strong enough by mezcal producers, and agaves from Tequila and Los Altos need to be blended with local varieties. Curiously, producers of tequila add a certain amount of varieties from El Llano to their blends too in order to give more body to their product.

12. Adding sugar, increasing the temperature and the use of chemicals can increase alcohol content, fermentation speed, or both.

13. Negotiations are currently at hand with distributors in Chile (with which Mexico has a Free Trade Agreement), Venezuela, Colombia, and Costa Rica (soon to sign a sortlike agreement with Mexico).

14. The two largest producers, however, pursue a different strategy and are reconverting their properties into *mezcaleras*. The reason for this is a better control over supply and demand of this prime resource, as well as the economic potential of the crop: agave is a very profitable crop provided one has enough capital to wait 6 to 10 years for the plant to mature. With profits in the range of $3,500-4,000 USD per hectare/year, unirrigated agave is second only to sugar cane production (which requires irrigation) and the extremely risky horticultural crops such as tomatoes, melons or watermelon.

15. *Seguro de Ahorro para el Retiro* is a retirement pension. Employers' participation amounts to 2% of the monthly gross salary of the worker.

16. *Instituto para el Fomento Nacional de Vivienda para los Trabajadores*. The employers' share in this housing fund amounts to 5% of the workers' gross monthly income.

17. Though not all innovations, of course. The sheer volume of capital investments made by tequila producers makes it impossible for mezcal firms to adopt certain techniques. Another inhibiting factor is that *tequila* is a protected product name with very strict production norms. Whenever a mezcal too closely resembles the taste of *tequila*, the Chamber of Producers of Tequila, fearing potential competition (any product made from agave in the State of Jalisco may officially adopt the name of *tequila*) immediately sends an inspector who may actually close down the firm (though generally bribes in the range of US $2,000-7,000 are paid).

18. In addition, 10% of IVA (value added tax) is added on top of the IESP. According to liquor producers, this is not constitutional because the IESP does not add to the value of the product. A long lasting legal battle is presently being fought out with Hacienda on the matter.

19. NAFIN does through it program of *Empresas Integradoras*. However, it demands from *mezcal* producers that they be formally associated, which is not the case.

20. Alcohol production is a state-run monopoly. Sold only to members of the *Cámaras*, it is sometimes hard to get as major companies such as Bacardi buy all production in advance. Periodical alcohol shortages have multiplied after the closure (in 1991/92) of one third of mexican sugar refineries.

21. See Wilson (1992) for an example of small garment producers in Michoacán where decline in collective efficiency resulted from increased enterprise differentiation.