GLOBALISATION, SUSTAINABILITY AND THE NEW AGRARIAN REGIONS: FOOD, LABOUR AND ENVIRONMENTAL VALUES[1]

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ABSTRACT

The globalisation of agriculture and food develops alongside contradictory processes of homogenisation and differentiation, providing grounds for enforcement of regulations and contestations that emerge from the ways in which social actors deal with interpretations and gradations of food, labour and the environment. It is therefore within this political arena that social changes and sustainability of the new agrarian sites have to be accounted for. The paper, with empirical reference to the new agrarian districts of Northeast Brazil, examines the social transformations occurring regarding changes in markets, production structures and labour practices; it shows how there is a major dynamics creating and reshaping such production spaces which is associated with the asymmetrical value placed upon the externalised quality definitions and parameters of the foods, compared with those associated with the quality of labour or the natural environments in which the foods are grown. The processes underway are severely questioning the sustainability of such developments. Super-intensive production, it is concluded, can no longer rely upon technological fixes-such as those associated with irrigation and water management-to halt the accumulation of both environmental or social risks in the production and supply system.

Key words: Globalisation of food, sustainability, Northeast Brazil, new agrarian regions, labour, technological changes.

GLOBALIZAÇÃO, SUSTENTABILIDADE E NOVAS REGIÕES AGRÁRIAS: VALORES DOS ALIMENTOS, DO TRABALHO E DO MEIO AMBIENTE.

RESUMO

A globalização da agricultura e dos alimentos ocorre juntamente com processos de homogeneização e diferenciação, oferecendo as bases para a implementação de regulações e contestações que emergem dos modos como os atores sociais lidam com as interpretações e gradações dos alimentos, trabalho e meio ambiente. É, portanto, nessa arena política que as mudanças sociais e a sustentabilidade dos novos espaços agrários devem ser compreendidas. O artigo, com referência

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empírica aos novos distritos agrários do Nordeste brasileiro, examina as transformações em curso, no que se refere às mudanças nos mercados, estruturas de produção e práticas de trabalho; demonstra como há uma dinâmica principal, criando e remodelando esses espaços, associada com valores assimétricos baseados nas definições de qualidades e parâmetros externos dos alimentos, em comparação com aqueles associados com a qualidade do trabalho e dos ambientes "naturais", nos quais os alimentos crescem. Os processos em curso estão fortemente questionando a sustentabilidade desses desenvolvimentos. Conclui que a produção superintensiva não pode mais se apoiar em bases tecnológicas tais como aquelas associadas à irrigação e gerência da água - para reduzir a acumulação dos riscos sociais e ambientais no sistema de produção e oferta dos alimentos.
Palavras-chave: globalização dos alimentos, sustentabilidade, Nordeste brasileiro, novas regiões agrárias, trabalho, mudanças tecnológicas.

INTRODUCTION

Recent literature in the rural studies disciplines gives some indication of the new patterns of uneven development in the South as a result of the globalisation of food supply chains. In particular, the growth of new consumption patterns in the North, fuelled by the increasing power of corporate retailers, has gone hand in hand with the uneven development of 'high value' export agricultures in the South (see Watts, 1996; Marsden, 1997, Goodman & Watts, 1997).

In this paper, we wish to explore these assumptions by relating them to the highly volatile and constructed nature of two major agro-export areas in Northeast Brazil (the São Francisco Valley and the Açu Valley). We do this to further our understanding of the interrelationships between three key 'value-spheres' which are currently structuring these 'new agrarian districts'. These are the spheres of labour value, food value and environmental value[4]. As we have discussed in earlier papers (see Marsden 1997; Marsden, Cavalcanti, Ferreira Irmão, 1996), these contested constructions in value go some way to integrate the means by which 'nature' is in a process of constant reconstruction around both the production of 'high value' foods and in their increasingly complex and globalised supply chains or networks.

A focus upon these value constructions, the ways in which key actors shape and define them, and the asymmetry in power they create, helps to demonstrate

[4] The concept of value is from hereon used to point out the meanings and gradations that are implicit in the ways social actors construct and explain their world. Labour, food and the environment are thus here analysed as significant and contested value spheres for the understanding of social processes developing in the globalisation of food.

how these new patterns of globalisation are transforming both social and natural conditions. Contentions and conflicts around these value constructions are dynamic elements in the configuration of such regions. Also, a focus upon these allows a more effective integration between a broader political-economic interpretation of agrarian globalisation (in demonstrating how such regions are created, sustained and become dependent, (see Watts, 1996) and the (undeniable) significance of social actors operating in local social contexts (see Arce & Marsden, 1993). In addition, it also helps to demonstrate that environmental inequalities and uneven development are intricately linked with the social value construction of foods and labour in such globalised regions. Indeed, as we shall show, sets of externalised social value constructions 'travel through' the globalised food networks in ways which condition, or at least set parameters for, local production relations.

In this paper with reference to in-depth empirical evidence from the São Francisco and Açu Valley[5] we aim to show how these different 'value spheres' are continually constructed. In doing this we demonstrate that global social relations and local social relations (Long, 1996) are inextricably connected through and in space. That is, vertically through the uneven operation and animation of global food markets, and horizontally through the unequal regional configurations of production and supply.

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[5] The San Francisco Valley and the Açu Valley are two of the most dynamic agricultural regions of the Northeast (Guimarães Neto, 1995) Araújo (1994, 1997) Andrade (1991); both of them were implemented as part of the development plans and agriculture modernization policies of the Brazilian government; they rely on the building up of dams on the San Francisco river and Açu and related irrigation schemes. Both of them were transformed by the prospect of export fruitculture. Their development as a pool for fruitculture, however, occurred in a distinct manner. The San Francisco Valley developed bringing together large enterprises colonos, who were at the beginning linked to agro-industries; who are being replaced steadly by more entrepreneural producers who carry on production aimed at reaching competitive markets; although these small farms outnumber the large ones, the most competitive are by far the large firms. The recent development of the Açu Valley is based on large capitalised firms, which benefitted 'with the privatization of the public investment, by which large firms were implemented to use the resources of the river regularisation' (Gomes da Silva, 1993:34) because of the failure of the original project for settlement of small farms, small farms have no choice but to associate with the large enterprises. The implementation of a 'flexible' approach to production is a mechanism used by one of the firms in the Açu Valley to integrated small producers under their close supervision on production and commercialisation. Although our main focus is the San Francisco Valley, we bring here a case of the Açu to point out to the ways social change and unsustainability are occurring in those new agrarian sites, as their similarities and differences contribute to the development of an approach that allows an understanding of the paths of development in Northeast Brazil. both regions are mostly localised in the states of Pernambuco and Bahia, as well as Rio Grande do Norte.

The question becomes how and in what ways are they connected? In this sense, we argue that they are arranged around the different value constructions of labour, foods themselves, and the environmental contexts in which both are materially based. The externalised priorities associated with the promotion of particular definitions of food 'quality' and value which are imposed on such production regions by consuming countries are by no means inevitable. While we show that they provide a central organising and empowering/ disempowering framework around which the value and organisation of labour and environment occurs, these asymmetrical relationships are increasingly contested and challenged by other social value constructions. These tensions are explicit in the case study we present.

Such an analysis raises some important specific and general questions about the sustainability of the new agrarian districts and agriculture. These regions represent the continuous management of contradictions inherent in the current patterns of globalisation; and they question the continuance over the long term of the current dominance of the consumer oriented food quality parameters in shaping such regional systems. More generally, they inquire whether over the long term, the maintenance of the unsustainable (see Marsden and Drummond, 1998) is capable of being regulated.

The following analysis outlines the keyways in which the value sphere of foods, labour and environment are currently being negotiated and assessed over time in the region. It attempts to demonstrate how these different spheres are coming together as key elements in the globalisation of the region. In this sense it provides an account of the social process of agricultural globalisation as it is occurring in and through agrarian space (see Llambi, 1993, Murmis, 1993). These in and through elements need to be seen and observed together because they both operate simultaneously, and they are constantly reshaping the social and physical space. Both are influencing the actors, institutions involved proactively and reactively. Thus, from a sustainability perspective both social and physical elements are being reconstituted in an interactive and symmetrical way. The parameters of labour, food and environmental quality are key mechanisms in this process of reconstitution.

More specifically, in this paper we put forward these arguments by exploring:

a) The social and economic transformation of agriculture and the countryside of the selected region, in an attempt to understand the main features and

singularities of that region in the context of globalisation; that is: how nature and food are constructed in that particular milieu.

b) The relevance of this process for understanding the ways in which social categories emerge, how they cope with the dynamics of production and markets; and how they respond to the ongoing pressures of the food markets.

c) Finally, the analysis illuminates how sustainable and unsustainable environments and livelihoods emerge in the context of food production and consumption. This is achieved by examining the process of incorporation of these particular sites of production in the food networks, and the recent changes in markets, production, labour and environmental contexts.

RESEARCH METHODS

Empirical material is based upon results of long-standing research carried out since 1993 in the San Francisco Valley the Açu Valley region of the Brazilian Northeast.[6] Qualitative research techniques were complemented by secondary quantitative data and newspaper collection. In-depth interviews were carried on with key actors in the field, these included around 30 women between age 17 and 53, other complementary evidence were collected either at the working places and worker syndicates to further explore the issues on work, employment and political participation. Life histories of colonos,[7] workers, small and entrepreneurial producers, owners and directors of large firms were collected to explore the impact of the development of fruitculture on their businesses and

[6] The research, co-ordinated by Josefa Salete Barbosa Cavalcanti, was supported by the CNPq – the Brazilian National Research Council (which enrolled several research assistants and senior visiting professors from Brazil, Argentina and the United Kingdom) and Facepe – Fundação de Ciência e Tecnologia do Estado de Pernambuco. Visits to the San Francisco and Açu Valleys also received the support of Fundação Capes and Federal Universities of Pernambuco, Rio Grande do Norte and Embrapa Petrolina. The authors are grateful to Professor Aldenor Gomes da Silva e Pedro Gama for their support in the field.

[7] Colonos are those selected farmers chosen according to Codevasf criterion to receive a modular irrigated plot to cultivate, after the irrigation schems were implemented in the São Francisco Valley. They were allotted 6 ha with irrigation and other 6 of dry land, 'sequeiro', which could be developed under contract and Bank credit. However over the years they began to face problems with production and markets and unable to pay their debts. As a result, they decided to give out their plot to others more entrepreneurial and capitalised producers.

life trajectories, as well as to understand technological changes and managerial approaches adopted. Interviews were conducted with technicians and representatives of research and marketing agencies: the Association of Producers for export – Valexport – the Corporation for Development of the San Francisco Valley – Codevasf –, and the Brazilian Enterprise for Agricultural Research – Embrapa. A particular kind of participant observation developed allowing researchers and research assistants the opportunity to view and accompany the workers in the fields;[8] this made them experience the hard work of those who have to be in the fields at a temperature higher than 30 degrees; additionally frequent visits to the Workers Syndicate made it possible to understand the problems and political actions operating in the region. Interviewers have also benefited from conferences and seminars that are usually undertaken to inform and up date farmers and workers on market trends and agricultural innovation.

After outlining some of the rapid agricultural changes in the San Francisco Valley the paper considers (i) changes in market relationships; (ii) the emergence of new production structures and (iii) the transformation of working practices. Finally, we consider the sustainability of these developing conditions, and the degree to which they are likely to experience growing instability, as many key actors begin to challenge the current value spheres of labour, food quality and environmental conditions.

CURRENT DEVELOPMENTS IN THE SAN FRANCISCO VALLEY

The Valley is a distinctive area within the sertão. Its distinctiveness is revealed in its fields and in its entrepreneurship. The landscape reveals differences in the size of the establishments, irrigated plot size varies from 6 to 400 hectares, buildings vary in size. The architecture of the buildings shows how the rural area has changed from a home environment to more of a work environment. Although on some plots small or large families live in small houses, other plots are mostly working places. Nonetheless, it is the

[8] The work of those graduate and post-graduate students is acknowledged; Juliana, V. R. Ramos, Cristina Belo da Silva, Rogerio Medeiros, Flavia Campelo, Morgana Oliveira, Sofia, Veloso, CNPq grantees.

entrepreneurial aspect of the farm units that marks the difference between them. There are large agro-industries, producing mangoes and grapes, tightly linked to the global markets, and small farms producing a variety of fruits and vegetables for national and local markets. Some of these small farms produce grapes as well, with an eye on the international market. In a broad sense, they are part of the same continuum of producers with different entrances into the global circuits. On all of these enterprises wageworkers provide most of the labour (Cavalcanti, 1997).

In the majority of cases there are indications of a gender division of labour and uncertainties about the rules of the markets. There are concerns about possible ways to increase productivity and discussions about strategies to improve the comparative advantage of their businesses in the context of fruit production. Complaints are also made about the unhealthy working environments and about salinisation of the plots, low wages and falling prices of commodity (see Marsden, 1997). There is a questioning of the 'unfair' treatment their products receive in the North, and they are concerned about the presence of new market competitors for their products, both in and beyond the Valley. There is some protest against the 'retreat' of the state and the ways it is handling currency and exchange, agriculture and markets. More generally, there is concern about the quality of goods, the environment and living conditions. Total production has increased greatly since the beginning of the 1990s and new markets have been found. Nevertheless, this requires a continuous adjustment of technology and management strategies, which impacts upon labour, growth in the region and sustainability.

Changes in the markets

It is in the 1990s that the linkages with the global market were stressed. The establishment of fruitculture and increasing fruit export opened up new ways to integrate the region into the global circuits of food (Table 1).

Table 1 indicates the significant increases in production area volume and export for two of the main crops-grapes and mangoes. While the area of grape production more than doubled between 1991 and 1997, production

volume increases over threefold. While this intensification of production is less dramatic for mangoes, exports increase over seven times. Grape exports began in the early 1990s, from a low base. These figures mask the fact that some of the large agro-food firms tend to export over 90 per cent of their mango production. Export production is thus concentrated on the large agro-export firms. Others tend to serve both markets. These balances between production for domestic as opposed to export markets are subject to volatilities in both world and national prices.

Table 1. São Francisco Valley production and export of fruits.

	Grapes			Mangoes		
Year	Area in production (ha)	Production (t)	Export (t)	Area in Production (ha)	Production (t)	Export (t)
1991	2.300	32.000	1.050	1.150	8.800	3.000
1992	2.500	40.000	5.000	1.900	12.000	9.000
1993	3.000	52.000	10.000	2.650	25.000	13.000
1994	3.500	94.500	14.000	3.600	35.000	18.000
1995	4.000	100.000	12.500	4.500	43.000	20.000
1996	4.500	118.000	12.500	6.000	65.000	22.000
1997	5.500	125.860	3.700	6.600	63.000	21.500
1998	6.500	160.000	4.300	7.000	158.000	34.000
1999	6.800	170.00	10.250	13.500	180.000	44.000
2000	8.000	182.000	13.300	16.000	195.000	57.200

Source: Valexport.

Participation in the global arena brought with it concerns about the capabilities of the Valley enterprises to attend to the growing requirements of quality (as related to types, tastes and presentation of commodities) as

well as to find and develop new methods of exchange with markets, brokers and ports. Thereafter global/local relations became part of the daily strategies of the main producers and developers of the region.

As a result of these global/local ties the region of Petrolina and Juazeiro in the San Francisco Valley has been transformed; moving from extensive cultivation and unskilled work forces to more intensive and research-based production. There were changes in the orientation of production and in the combination of means of production with repercussions for the uses of labour, technology and other inputs. These have been undertaken in order to meet the priority of 'quality', that is to 'add value' to the products. This super-productionist strategy has been based upon agronomic innovation and intensive, as well as extensive production.

The exchange with external markets was intensified via new information technologies, by which real and virtual contacts were established. In addition, changes were brought about in the control of labour, as well as in the views about productivity and competitiveness, against the background of comparative advantages of the region. Social actors had to adapt to this new environment.

The assumption that the market has played the most important role in the region in the past decade tends to conceal the paramount presence of the state in providing infrastructure to shape and give impulse to this expansion. To clarify this, one has to distinguish the actual context marked by a steady withdrawal of the state from its previous developing role in shaping the region and opening it up to the market. The construction of new regions is one of the results of the project of modernisation of the Brazilian economy and agriculture (see Graziano da Silva,1996). More recently, the relationships between market, the state, and the local population is developing with growing tensions. Less state, more market, and increasing social inequality require more mediations to minimise the effects of market forces.

As viewed by the producers, the units of production are shaped increasingly according to market demands. As explained by one of the Directors of a large firm:

"This firm was established 12 years ago; we have 250 direct workers and we hire more, about 300 in harvest periods. We had experienced several cultures: lemon, tomato, melons, mangoes and grapes. Grapes became a very sensitive commodity; the market is demanding seedless varieties and as a result more research and technology. We compared the yield of each one and did a market study. We opted for mangoes and grapes. We cultivate 400 ha with mangoes and 10 ha with grapes and are to enlarge the production of grapes to 120 ha. This was a decision taken 3 years ago (1993), after 3 years of research. We export 90 per cent of the mango production to Europe."

Apart from continuing studies and comparative market research, this firm deploys the following strategies:

- Permanent contacts with external markets and feedback of demands; for this, they have technicians and clerks in Europe and in the United States to do price research and to offer information about their products, as well as to participate in sales and opportunities for auction.
- Read and advertise in specialised fruit and export journals.
- Gather information on other countries' production.
- Read the Gazeta Mercantil to keep sight on internal market prices.
- Have their own packing house and three cooling chambers; own freezing container trucks to transport fruits to the port and use their own label.
- Invest in labour training.
- Agronomists travel very often to other fruitculture countries to get more information about new varieties of fruits (grapes is a case in point).

The daily strategies used by such firms reveal how much of the local production is linked to international markets.

It is clear that the world fruit market has been transformed in this decade; so too have social actors' responses to it.

As a once very successful producer says:

"When I woke up one day the market had changed and was demanding quality. We had to change too; more qualified people, new technologies at

> harvest and after harvest; packing houses, cooling chambers, packaging and wrapping papers. There was a revolution! We had to travel, to hire external experts, and to develop new systems of cutting and irrigation. There were changes in labour control and in the ways fertilisation, pulverisation and timing were done; the introduction of computer programming was also new. We had to enter into partnership and even rent the farms to other more export-oriented firms to evaluate our own position in this."

Complementary strategies, if not the most effective ones to assure the competitiveness of the San Francisco Valley in the markets, are those directly related to commercialisation. Vitally important here was the creation of a producer/export association aimed at to promoting a forum for co-ordinating marketing strategies and competitiveness of the regional production. The Valexport is the major association to facilitate the commercial transactions, particularly exports. By directly acting and bringing together producer to improve production or devising new ways to counteract market barriers, this association became an icon of the São Francisco Valley.

It also provides the forum for the work of special assemblies for each crop; BGMB – Brazilian Grapes Marketing Board and Mangoes Marketing Board makes a forum for strategic management on markets and quality requirements. Based on their understanding of the international markets and the need to expand sales, recently they increased their actions on developing access to the internal market to counteract problems with the external ones. As a result, their representatives took the leadership on the Brazilian fruitculture sector. Its President came to be elected the President of the Brazilian Fruit Institute - Ibraf. According to him:

> "There are some major challenges to the producers at the present; they are to lessen the factors that reduce the competitiveness of the sector to improve the system of commercialisation, to make the internal market stronger".

Valexport is not a direct dealer in the markets. The more competitive export firms send their own representative to act in the export/import arenas. In Rotterdam, for example there will be representative of those Valley firms in the peak selling time period, which for 1998/99 began in August and runs until February .

THE EMERGENCE OF NEW EXTERNALISED PRODUCTION STRUCTURES

Despite the continuous degree of variability in production structures in the valley (with the maintenance of a small producer sector as well as the growth of large export-oriented units), it is clear that the externalised nature of the production system in terms of the drive to develop and maintain export markets is influencing the creation of new integrated systems of production. These are more capable of linking the demands of the external market to the variability of production structures and systems in the valley. And they combine the regulation of production with the processing and packaging of products.

These types of enterprise - also in evidence in the other irrigated areas of the North-east (e.g. the development of Rionorte in the Açu valley, Rio Grande do Norte) have grown up as highly coordinative organisations capable of assuring the Northern customer of the consistent quality and provenance of the foods produced. It is worth focussing here on some of the key internal organisational characteristics of these enterprises. To do so indicates quite clearly how they are attempting to co-ordinate the natural, labour, and food quality value dimensions.

Three such enterprises are Uvale and Mangax in the São Francisco valley and the Rionorte enterprise in the Açu valley. While they are all attempting to deliver to the export market as well as to the urban Brazilian markets, they differ in terms of co-ordination of the value parameters.

(i) Uvale covers 550has in the valley, it is direct farmed by the enterprise and it has experienced rapid expansion since 1993, producing 'red globe' and seedless grapes. 25% of this production is directly sold on contract to Carrefour, the French owned retailer (who also has a significant presence in Brazil). Another 25% of production go to other export , with the remaining 50% destined to São Paulo, Natal and Recife. The land is divided into 7 discrete 'mini-farms' employing in total a labour force of 385. However, 125 of these are engaged in central processing and packaging. 60% of the labour force is female and there is a high level of individual task specialisation. This is thus a highly centralised operation.

(ii) Neighbouring Mangax varies in that it concentrates on co-ordinating 30 independent mango producers covering 1300 hectares. It buys inputs for

the producers and sells the product for which the producers will pay a considerable levy. It is based upon a 'flatter' partnership and management principle and provides the customer with the surety of quality control, particularly through the packing house facility at the centre of the network of producers. 18% of the total product is usually rejected on consistency and quality grounds, with 60% of the product going to export. Mangax provides, therefore, a branded boxing scheme both for the market and the individual small producer. In return, the producer gets access to these markets through the conditions of membership controlled by Mangax. Having spent years improving the speed of production on a monthly basis, at the moment the agronomists employed by Mangax are designing irrigation dressings to the mango which are capable of slowing the speed of growth of the crop so as to meet the different 'peaks' and 'troughs' of market demand more effectively. It is no longer just sufficient to produce super-yields all the year round (see Marsden, 1997). Irrigation, pesticide and herbicide applications are now being tempered to fit more sensitively with the demands of the external market. The very tempo of production thus needs to be harnessed by the application of innovative technologies on a continuous basis. And it is the role of the Mangax central organisation to innovate, control and disseminate these best practices amongst their enrolled producers.

Here we see the high level of co-ordination of production (both in volume, timing and quality) brought about by the overall need to participate in global food markets. These processes also affect the home markets. In 1996, 650,000 pallets of mangoes left Mangax, with half of them going to export. The export market leads the processes by which domestic foods are distributed. Agronomic experimentation (for instance in the use of Paelobutrazol, Domilca, and some hormones) is a key element in the striving for more sensitive control over the 'timing' of production to market.

(iii) Like, Uvale, Rionorte is a much more hierarchical structure geared to the export of melons, and a series of other fruits in the Açu Valley. It dominates the surrounding landscape of the town of Açu and is its major employer. It enrols small farmers into its system as well as direct farming large tracts of irrigated land (11,000 has) . It is currently considering undertaking

further 'land concession' by encouraging smaller farmers to take up sub-divided parcels of irrigated land. The main consideration is producing melons which satisfy the particular quality parameters of supermarkets in Europe. The firm has recently adopted 'Integrated Crop Management' systems at the behest of Sainsbury's. Considerable problems are emerging, however, concerning the intensification of production which has proceeded at a fast pace in recent years. Farmers argue that they 'cannot keep going on like this'. They argue that soils are getting exhausted and the crops are continually more prone to white-fly infestation. The costs of these disruptions in the consistency of supply are met by the farmer. Land directly farmed by Rionorte does not seem to have this problem, only that which is farmed by the independent sector. These severe problems of maintaining 'quality' supply as well as the growing pressures from the retailers and the external market to increase the quality parameters, becomes a major source of friction between the independent producers engaged with Rionorte and the central staff of the organisation. Agronomists are trying to sort the problems out only to find solutions seem to be only temporary. Solutions seem to be somewhere beyond technological fixes.

It is argued by the central management that there are rogue farmers who do not ask for help. Some get infestations of fruit and white fly, ignore it and then pass it on to the 'clean' producers, which just exacerbates the problem. Hence, on severe quality grounds the organisation faces increasing difficulties in managing labour, food quality and environmental implications at one time. The farmers suggest that the application of herbicides and pesticides are not the solution; and new areas of production and continued intensification are not seen as sustainable by the producers. The producers see three interrelated problems that they are facing (i) the continual cost-price squeeze, with the escalating cost of inputs but not farm gate prices as these problems increase; (ii) the growing problems of risk of infestation from fruit and white fly; and (iii) the growing 'quality' regulations being placed on them by Rionorte management in the name of maintaining export market access. Rionorte is being pressured to increase its traceability procedures, which is difficult to do when dealing with 8400 boxes per week. Producers are 'kept in the dark' in terms of the balancing between internal and external market changes. One farmer said the 'internal market was like playing bingo'. The smaller farmers argue that they needed be given more information by Rionorte management. Moreover, there are clear tensions between the small and the

larger producers engaged in Rionorte. The smaller farmers see themselves as disadvantaged in the 'internal market' that has been organised implicitly in the organisation. They want to innovate themselves, for instance, by trying green pepper production, but this will be no good if the larger producers get into it. Also they recognise that the small farmer could produce products with less pesticide applications but they would not be seen as the right size, shape and skin colour 'for the housewife'. One farmer admitted that 'so I have been applying more to satisfy the housewife'. Meanwhile no one can seem to find an answer to the occurrence of the white-fly.

This last example shows how many small producers are getting trapped in the interstices between the skewed food quality and environmental parameters, and the development trajectories of the export enterprises which can only abide by the conceptions of the 'final consumer' and 'housewife' articulated to them by external retail capital.

TRANSFORMING WORKING PRACTICES

These types of competitiveness pressurise producers to continue to restructure the organisation of production by employing new labour-saving technologies.

As described by one of our informants and is largely observed in the region, the structure of the market and the character of the demand has changed dramatically during the past decade. The competitive environment of the global markets has by itself set the grounds for the encounter among regional producers and buyers/consumers but especially for disputes among regional competitors for a place in the same competitive space- the global markets. Those who are in the market have reached it through a diversity of ways and will struggle to successfully guarantee their presence there. One key facet of this participation concerns the transformation of the work place and organisation of labour.

It is in this field that the mediation of quality – or a certain notions of quality – plays a major role in the enforcement of sets of regulations, according to which the amount and character of technology and labour are weighed and commodities are constructed. Hence the construction of the food commodities themselves goes hand–in-hand with the particular valuation and

organisation of labour and nature. To assure the competitiveness of their commodities, the major firms opt for continual technological innovation, although their comparative advantage relies mostly on cheap labour. In doing so, they bring about new gradations and social categories of work in the region.

New jobs are offered to qualified workers who are well prepared to operate competently with new technologies and act in the marketing spheres. The quality of labour opens up the region to newcomers, giving opportunities for migrants of other regions and nations. Producers have to continuously adapt themselves to this, but they have to have the resources to respond in a competitive way. Not all of them are ready to do this. The percentage of those who gave up their farms , is high. In the case of one irrigated district that provided plots for more than 1,400 colonos, ten years later only 10 per cent of them continue to farm. Of those who give up their plots, some stay in the region as wage labourers for the new entrepreneurial producers.

It is easy to deduce from such evidence that these changes in farm organisation and structure affect employment, impacting on number of jobs, type of contracts and required skills. This provokes sharp changes over a short period of time. From being an expanding attractive site for unskilled workers it emerges as a region for selective employment enclosing segmented agrarian markets. This has reduced the Valley's capacity to respond to the surplus labour of Northeast Brazil. In this sense, whereas the growth of the region was a result of the extensive use of labour, the actual conditions of production led by global standards of competitiveness pressed producers to restructure the organisation of production by employing new labour-saving technologies and a more adaptable and qualified workforce.

The labourers are the first to notice the impacts of those changes in their work practices and life. The impulse of transformation surprised the workers. It took a decade for the once migrant and temporary labourers to adapt to a more permanent working place, which affected their perception of employment. The opportunities offered by the conditions of this region encouraged them to define their work in terms of permanent employment; nowadays the circumstances force them to change their minds. As a female labourer comments, analysing the impact of productivity on the work place and employment: "productivity is the most important issue. He (the employee) admonished us: it will reduce jobs".

In the first years of their work in the vineyard, women became skilled in the activities required to shape the grapes and grape bunches according to market

definitions. This gave them a sense of pride in their work. As their expertise grew, they became able to find employment easily, and they could move from one job to the other as they pleased. As they became more aware of the labour-market guidelines, they began to think of a lifetime career, they became careful about their reputation as employee, and consequently they wished to be attached permanently to a 'successful firm' (see Cavalcanti, 1996a). They want their labour identity card to show a steady participation in the labour market and an attachment to one particular firm. This, according to them, would indicate their career as a 'competent worker'.

A female worker would usually find a registered job in large enterprises, because, as commented, small farms don't hire labourers on a permanent basis. The formal aspect of the job is also shown in some of the most successful establishments, where women use protective boots and gloves in the fields and uniforms in the packing houses. Their work is measured according to tasks defined by a gender division of labour. This functions as a mechanism by which more women were incorporated into the fruitculture labour market. For instance, the vineyard labourers are mostly women; they make up 65 to 80 per cent of the labour used in the fields (Cavalcanti et al.1998). However, as far as technological innovations become more prominent in the production, the proportion of women in the labour force is being reduced, and this is particularly so in the packing and post-harvest activities. New machinery and new varieties of fruit are affecting tasks in the field, reducing mostly women's jobs (Table 2).

The reduction of female jobs is also affected by the implementation of the 'multiple worker'; which in the case in point will favour men. Some firms are bringing men and women together to develop similar tasks in packing of fruits in a clear attempt to substitute those considered to be the more expensive workers, which, are generally said to be women. Women are considered more expensive workers because of their rights for leaving support on late pregnancy and child birth; the 3 month paid leave they are entitled to under state regulation is an issue constantly debated by producers. Because of that, some firms are already working under a 'degendered' division of labour, by implementing an approach by which male and female workers are brought to work side by side and engaged in the same tasks, in a clear attempt to reduce women's overall participation in the sector.

As with farm enterprises themselves, the labour milieu is made more competitive as technological innovations continue to restructure working practices (see Bendini and Bonaccorsi, 1998). This mutable work environment is, however,

bringing discontentment among workers, as they foresee losses of conquered social benefits and was probably the main motive for their first general strike.

This was organised by the syndicate delegates; these delegates come from the larger farms and have work stability. They cannot be fired while in that position. As they say, there are 151 firms in Petrolina, of which the majority is made up of small units with no more than 10 registered workers. The small units can't have delegates; even now, after the new convention was signed, allowing for a delegate for every 16 workers. Hence, the workers movement is related to the larger units.

Table 2. Technological innovations and the gender division of labour.

Usual Practices and Procedures	Changing Practices and Procedures
Irrigation' por sulco' (sucking pipes to induce water for irrigation. Men's job	Sprinkle irrigation maintenance Men's job
Chemical fertilisation Men's job	Fertirrigation - fertilisers dissolved in water Men's job
Shoulder Pulverisation Men's job	Arbus: a container for pulverisation for application of chemical's dissolved in water Mens' job
Scissors used in the cleaning of grapes Women's job	Seedless grapes, less cutting and clearing Reduce women's job
Scissors used in the cleaning of grapes Women's job	Chemical clearing of grapes Reduce women's job
Clearing up weeds in the fields with hoe Men's job	More use of tractors Men's job
Harvest, washing and Selection of fruits Women's job	Computerised washing, drying and classification of fruits Men's job

Source: Embrapa, 1993, fieldwork de 1995 a 1997, Petrolina/Juazeiro.

As one of the syndicate representatives argues:

"Not every worker is registered"; we can't go and find everyone. In the fruitculture there is a "dammed come and go; we can't say what is going on;...what I know is that there is unemployment. Even now, a big group is firing the old workers and employing new ones".

"I knew 2 firms which used to produce a lot of mangoes and are now closed or have their planted area reduced. Another group has closed, entered in partnership and opened new firms. New firms came in and are doing well. The strike was called upon the issue of wages. As there was some problems with the non-payment of the 10 % on top of minimum wage, agreed in the 1994 convention, also, delays in payments and no payment at all. The strike had the aim of renewing the workers rights as well as to up-date the salaries that went up from: Rs$128,00 toR$: 139,00."

The dynamics of changes taking place in the Valley runs at considerable speed; as the syndicate representative argues: "We didn't finish the worker census. We could not keep pace with the changes going on; as when we were doing it some firms began to fire workers, or hire new ones. The major problem occurs in small firms; they don't provide information.

SUSTAINABILITY ON SHAKY GROUNDS

When the most recent Plan for development of fruitculture in the San Francisco Valley was first presented, in the second half of the 1980s, it was believed that by providing irrigated plots for small farmers and jobs for its rural population, in order to alleviate the poverty of the driest zone of the Northeast of Brazil, the state would contribute to the development of the sertão. According to planning agencies and related literature, each irrigated hectare would employ 6 people. In fact, accounts for the use of labour in the sector subscribed to this estimate (UFPE,1991, Lima, 1994). In the next decade, however, this goal has been reviewed, with only 2 people now expected to be hired in each irrigated hectare. It was also thought that exporting would be a major source of income for the region. However, in spite of the fact that 'economic growth' of the region has been achieved it is not equally distributed and the basis of its sustainability lies on shaky grounds.

From the smaller producer's perspective, changes in the production side were not accompanied by market regulations on imports. Regulations on imports

are not applied internally. The opening up of the economy and absence of protective barriers on fruit imports or national regulations on imported goods, along with low interest loans and subsidies to the buyers, are claimed by the local producer's to have reduced their opportunities in the market. As, one large producer points out (Agrofolha, Folha de São Paulo, September, 4, 1996):

> "Brazil imports represent US$ 400 million of fruits. Imports are financed at up 365 days with interests of 4 to 8%. National fruitculture wants to limit that facility. The State doesn't look after the national producers. The Brazilian government does not have a policy for this sector. The government closed down the FRUPEX[9] and did not create a policy for the sector".

This process of market externalisation and exposure is combined with a series of other new destabilising factors.

(i) Toxicity

In November, 13 1996 - The Folha de São Paulo reported on use of toxics and intoxication of rural workers, looking especially to the workers in what they called "The Valley of the Fruits". The uses of toxic chemicals in agriculture are now recognised as one of the problems raised in the area, affecting producing and selling of fruits, not least the impact on the workers life and well being.

The health problems caused by toxics are said by doctors to be a double-edged instrument for producers and workers. While producers may be fined by the Ministry of Labour for not complying with the safety rules, workers may use it as an excuse to get a day off by having an absence in order to see a doctor on toxic symptom excuse. Nonetheless, discounting on bad uses of the laws, health problems caused by fertilisers and other chemicals used in the fields are bringing problems to labourers in the region. This is why the labour syndicate agenda includes specific points such as to define protective measures for the workers, such as how many days or hours the workers must stay out of the fields after application of chemicals.

[9] The Frupex was a division within the Ministry of Agriculture, located in Brasilia. It dealt with fruit-exports. It developed a means of communication and some mechanisms to point out market trends and opportunities. It was closed under the restructuring of the state commenced in the 1990. In 1993, in visit to Frupex to Brasilia, we found out it was closing down.

(ii) Reduced levels of job creation

Shortly after the announcement about a new irrigation plan to be implemented throughout the SFV, in which it was stressed that: Irrigation Project will generate 12.000 jobs, as 4.000 ha would be irrigated in Pontal do Sul (Jornal do Commercio) September, 20, 1996), there came warnings of the continuous enforcement of market rulings on exported goods. Regulations on food producing relate producers and consumers: to protect consumers so they can be eating healthy and clean products; for producers, to maintain their products in regulated markets, and prevent losses when issues of competitiveness arise. There are different levels of control of such regulations.

The United States, for example, not only requires that severe quality rules are followed, but send their own inspectors to production sites. As reported:

> "the United States imposes more barriers on fruits. The Clinton plan put more pressure on the quality of water used, harvest methods, wrappings and storage to be sure that the exporters are following the same food security standards as those in US. The inspectors shall do their work in the same producer countries. Clinton says that countries that don't accept the FDA inspection would be prevented to sell in the US (Jornal do Commercio, October, 4, 1997)."

These difficulties experienced in fruitculture and its implementation, as well as the tough export market control, didn't impede the focus on fruitculture as the key attempt to solve critical aspects of the Northeast economy. The President of Brazil and the major developers consider fruitculture (BRASIL, 1996a :p.3) and tourism the best stakes for the Northeast development. This is also associated with the ways these two sectors contribute to the general balance of payments.

In September 26, 1997 the Jornal do Commercio published an important front page:

> "Plan for the development of the fruitculture in the Brazilian Northeast, emphasising the ability to transform the Northeast Brazil into a California Tropical, by sharing 25% of the annual world fruit market- of 18 billion, by the year 2007."

The project would be developed by private and public sector representatives. The figures refer to a total equivalent of US $1 billion that would be used to irrigate a further 1 million ha, in ten years, in a yearly basis of 100 thousand ha.

The aim is to improve the Brazilian share in the international market of fruits, because it has been of a poor 0.5% of the world production, in spite of

being one of the largest world producers. The new fruitculture project would be implemented in 15 "new points of irrigation allowing for the generation of 200,000 jobs." As now underlined, however, the irrigated fruitculture provides for only 2 direct jobs per ha.

Of particular importance to the successful future of the new project, is the evidence that the Northeast comparative advantage in relation to other regions of production is its significantly lower cost per irrigated hectare (Brazil, US $6,000; Chile, 15.000; California, 21,000; Israel, 28.000).

The employment of 2 people per ha. is already occurring in the San Francisco Valley, as technological innovations have cut short the labour need, especially of non-qualified labour. The region that was in the last decade one of labour attraction and demand is being changed into what relates to 'labour hospitality'. "Everyday tons of unemployed come to Petrolina to find a job" The Jornal do Commercio (February 23, 1997). The Municipality Welfare secretary now, however has to help the families to return to their original cities.

In the last two years of the 1990s, there has been increasing concern about the reduction in the opportunities for employment in the region, in clear contrast to the first phases of its development (Cavalcanti, 1996b).

(iii) Conflicts over water regulation

Despite the rhetoric, there has been a process of gradual withdrawal of the State and its main role as developer of the São Francisco Valley. Since the inception of fruitculture in the region, the Codevasf (the Corporation for the development of the San Francisco Valley) received public funds for the sector, with the aim to do so until the colonos were entitled as owners of their plots. The process of transfer, the costs of technological training and assistance to the producers themselves started as soon as the phases of entitlement took place. The establishment of District Boards with some support of Codevasf started, in a certain sense, the privatisation process. To get formalised as proprietors of the plots they were entitled to pay the Bank debits and water bills. Those who did not pay their bills were penalised and their water supply disconnected; those affected decided to react.

By the mid-1990s, the reaction of the so called irrigantes brought District administrators, producers and Codevasf into confrontation; for the first time in

the Valley there developed such a movement; at the end, the irrigantes achieved a Codevasf compromise on not maintaining the cut on the water supply.

> "Irrigantes celebrated victory and agreed with Codevasf. "Colonos were camping for 12 days in Juazeiro Town Hall; they organised Parades in the central part of the city. (Jornal do Commercio, February 18,1997)."

This refers specifically to a dispute about the penalised cut of water supply because of non payment of the bills by the consumers. It demonstrates how power relations and the role of local politics are evolving around disputes among distinct social categories and the implementation of privatisation schemes.

Talks about the privatisation of Chesf – the Hydro electric Company of the San Francisco Valley – (the main energy supplier for the region), raised questions about consumers paying for the use of the water of the São Francisco River. Jornal do Commercio (April 15,1997) informs: "Enterprises, Irrigantes and so on, shall pay for the use of the San Francisco River water," commenting on the constraints to be imposed also on private and public uses of irrigation .

As the debate on privatisation was continuing, this problem re-emerged in the San Francisco Valley, as reported then: (May 18, 1997, Jornal do Commercio): Nilo Coelho, A District drowned in problems.

This was a district with 1446 colonos and 132 entrepreneurs and a R$33, 9million general production. Of those, 72% were in trouble, because of water debts; only 386 colonos and 55 entrepreneurs were solvent. The problem emerged when water was cut to the insolvent producer plots, preventing the use of irrigation in these plots. This was happening in a district seen to be an exemplar of the ways agriculture development was changing from state to private responsibility, including the handling of irrigation schemes. The major problem, according to the administrators of the district is a debt of more than 30 monthly bills and property instalments unpaid. According to the colonos this happened because of the large amount they are asked to pay for water (energy) bills. Such decisions came about before the election of the representatives of the users in the Administrative Board of the District, as it was defined that those in debt must not vote. As a result, the elected representative of the colonos in the District Board was a new "colono", who

was also the secretary of agriculture of the Municipality of Petrolina, a case of interference of local politics in the privatisation of irrigation schemes.

Water bills become a long running concern for producers in the San Francisco Valley; colonos were now being required to pay for the energy to bring the water to their plots and they naturally use to call this the water bill. However, as was very often stated by agricultural technicians, they were only paying the electricity, not the water supply. Never mind the purpose, colonos have developed several forms of daily resistance against these changes, in earlier times some of the hydrometers were broken up to avoid the bills.

These new confrontations represent two merging issues: a) the new formation of irrigantes as a social category and b) how the attempts made by the state to retreat from the sector has proved difficult to achieve. The State has not been able to avoid involvement in the disputes despite the gradual privatisation of supply.

Irrigantes as a social category brought together those who were facing the same problem at that moment, i.e. water billing payments. Irrigantes became a suitable label chosen to conceal differences among those producers, in spite of already analysed inequalities and differentiation among them (Cavalcanti, 1995). Their moves were also in tune with other social movements, such as the Brazilian rural workers and landless movements. By collaborating with these movements, they benefited from their strategies and people's support, bringing their case to the streets; by camping, protesting, closing the main bridge, going to Brasilia, they make a stronger movement. This forced Codevasf to allow them to resume the water uses. This led to a cooling of internal problems occurring in the Districts managerial attitude towards the problem.

(iv) Inducing marketised production

A final aspect of the changes occurring in the region concerns the efforts to increase non-seasonal presence of commodities in the export market. As pointed out by Marsden at al. (1996), the comparative advantages of this region were enhanced by the possibility of several harvests in a year. Recently, this has been, practically, taken to its highest point, 21 May 1997- Diário de Pernambuco: There will be an increase of 35% in the production of mangoes in the off-season harvest time (48 000 tons in 1997). This is a result of the uses of

floral induction, developed by Embrapa. What is observed in the field is that, floral induction and other technical practices are very much in use , either to advance or delay production according to external market vagaries.

Transformations going on in the production side is in pace with new approaches to the market; new information technology is increasingly used to attract new foreign buyers for the products of the region. For example:

> "The Valexport will introduce Electronic Fruit Auction. This instrument will improve the sales of the products, as well as diminish the costs of transaction via intermediaries. (Jornal do Commercio, May 14, 1997). This was also stated in interview with the President of Valexport".

The model of development of the San Francisco Valley is in pace with the so called neo-liberal ideas in use, by which it is given prominence to the external market requirements. This also induces both the deregulation of labour and water supplies. Additionally, the highly regulated market for export does not have a symmetrical control on the import of goods. This leaves the national producers without protection from imported competitive goods in the national market. Furthermore, progress in improving the relations with the market through quality of commodities has been accompanied by changes in the uses and division of labour. Workers are worried about the maintenance of their rights . In the same year of the irrigantes movement there was a general strike of the workers which lasted 3 days. That movement was the first to bring together the majority of the workers around an agenda with which they confronted producers. They wanted better pay, better health and security benefits and the enforcement of rules on the uses of toxics, as related to the workers health.

CONCLUSION:
ASYMMETRICAL VALUES AND THE NARROWING OF OPTIONS

Throughout this paper we have analysed the social dynamics of new agricultural sites by revealing the major ways by which food, labour and nature are being constructed. We showed that the externalisation of production and the pervading notion of competitiveness are becoming major parameters for the development of such regions. We also pointed out daily confrontations between the major social actors who hold different 'stakes' in the outcomes of such regional development. Gradually the unequal participation of the different

actors in the shaping and appropriation of the resources provided, is causing perplexity and discontentment to those who expected to improve their livelihoods. The gaps between social expectations, the physical capacities of the environment, and the delivery of 'sustainable' development are getting wider.

As the last section of the paper indicates, in terms of market relationships, environmental risks, contestation of water rights and in the significance of job creation, the current sustainability of the new agrarian development looks increasingly suspect. Through our analysis of market developments, changing production structures and labour practices we can see how there has developed an asymmetry in the priorities of externalised value associated with particular parameters of food quality. These dominant parameters, moreover, are influencing the ways in which labour and production structures are developing ; and in turn how the natural environment is being treated. The faith in technological 'fixes' continues even though there is a narrowing of options available in terms of coping with the balances between food quality, labour and environmental values. Whereas, the early problem to be solved was to increase production through the heavy investment of irrigation systems and planting regimes so as to increase both the area and the intensity of production, this problem, once solved, created others. Organisational innovations were then needed to ensure the consistency of 'quality' production to the export market. This was achieved by the growing dominance of the large agro-export firms and the continued use of agronomic innovations they could deliver in terms of upgrading the consistency of production over time and in terms of the quality of products.

As we see in this paper, however, these innovations also reach 'limits' in the sense that they continue to confront both the volatilities in the market- with some firms now striving to regulate not only production, but the growth time of plants even more carefully so as to time the production with specific market demands- and in the labour and environmental spheres. Many of the smaller producers and farm labourers become conscious of these limits in terms of the sustainability of their production systems (seen in the increasing incidence of pests and diseases) and the toxicity risks of labour practices. Water becomes anything but a 'free-good', and its regulation becomes crucial for the survival of production. The growing demands of the export market and the lack of protection associated with imports increases the degree of externalisation of such production systems. Meanwhile, production keeps on increasing and the region strives to become a major player in global fruit markets.

As the development proceeds, however, we begin to see, somewhat ironically a gradual narrowing of the options available in solving the new problems that it inherently creates. The development of 'hard' technology is no longer the answer even if it is a necessary pre-requisite for continued success in capturing the quality driven markets. Rather, the cycles of production and exchange developed have to rely upon the social construction and organisation of labour and of nature; with rapid and gendered changes in labour practices being matched with organisational innovations in the relationships between small farmers and the export firms. For the latter, the advantages of gaining access to lucrative export markets are tempered with the need to control and police their local production systems. This seems to be becoming much more difficult as producers and nature begins to 'fight back'.

We see then in tracing these new and quite rapid developments in the new agricultural regions, the significant difficulties in creating a sustainable natural and social system capable of continuing to generate long-term benefits. The very asymmetries between the values constructions of foods, environments and labour and production processes tends to reinforce this process of unsustainability however progressive and modernising the schemes are projected by development agencies. To study such regions demonstrates the significance of the development of new cycles of vulnerability as part and parcel of the new patterns of the globalisation of agriculture and food. Moreover, despite all the justifiable concern surrounding aspects of global climatic changes, in the agricultural and food sphere, new patterns of regional environmental development (as we see here in North-east Brazil) associated with the globalised and intensive food system are creating just as significant and more immediate types of environmental and social vulnerability.

More 'healthy' consumption of fruits and vegetables in the North are based upon the asymmetries; and upon an intensive agricultural paradigm which is conveniently 'distanced' from those sites of consumption. In this sense the globalisation of foods represented by the new agricultural commodities and production systems, are seemingly creating spatially compartmentalised packages of unsustainability. But at some point, perhaps not to far into the future, new alliances between producers and consumers will signal the end of such asymmetries in the construction of environmental, food and labour qualities. We should hope for it.

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