

Globalisation and regulation of food risks. A theoretical overview.

Paper for the Conference in Chiang Mai

'Changing environmental governance in Asia. Globalization industrial transformation and new state-society relations'. 11-12 October 2003

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Abstract.

As globalisation process covers more and more aspects of life and includes food, it becomes increasingly important to develop consistent theoretical perspectives on this process. In this paper I will first identify different theoretical views on globalisation and build on the views of Giddens and Castells to analyse the globalisation of food production and consumption. This will lead to the identification of structural tensions in the regulatory options in this globalising agri-food networks. The concept of agri-food networks is introduced to analyse the tension between global and local regulation of food production and consumption.

1. Introduction.

Regulating the environmental consequences of food production and consumption as well as the safety of food is no longer the sole responsibility of independent national states. The development and implementation of the regulation of food is increasingly influenced by processes in other, sometimes distant, places. Global trade, including food trade, has grown rapidly during the last decades leading to a search for new ways to regulate the impacts on the environment and safety of food production and consumption. Thus the regulation of food is globalising, like many other aspects of people's lives and understanding the changing practices of regulation needs to be based on a consistent social science analysis. There are however different theoretical perspectives on globalisation within the social sciences and I will review them to identify the most promising views to analyse the regulation of food risks. Whereas some theorists see globalisation as an unequivocal process towards a global world economy, others like Giddens and Castells regard it as a much more diverse and contingent process and their views offer more tools for analysing regulation of food risks at the beginning of the early 21st century.

However, before reviewing these different theoretical perspectives I would like to summarise some empirical indicators about recent changes in international food trade.

2. Globalisation of food production and consumption. Empirical evidence.

The production and consumption of food has had international aspects for most of the known history of mankind. However, the recent process of globalisation has definitely shaped the scale as well as the structure of international food trade.

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World trade in agricultural products has grown impressively over the last decade, while simultaneously world market prices for most agricultural commodities have gone down. See table 1.

Table 1: World exports in agricultural products:
(index: 1990 = 100)

Agricultural products	1992	1994	1996	1997	1998	1999	2000	2001
Volume world production	103	106	113	116	117	121	122	123
Volume world export	110	120	130	137	140	141	147	149
Unit value	99	100	112	104	97	93	89	88
Value world exports	108	119	145	143	136	131	132	131

Source: WTO International Trade Statistics 2002, table A1, p. 167.

In particular, the export of more luxury food products like fresh fruits and vegetables has known a marked increase over the years. See table 2.

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Table 2: Fresh fruits and vegetables, three-year average export values (US\$ 000s)

	1961-1963	1970-1973	1975-1977	1983-1985
Fruits	1.565.290	2.833.285	5.778.681	8.424.558
Vegetables	773.631	1.452.058	3.108.964	4.476.262

Source: Friedland, W. (1994), p 215.

The total value of food exports is estimated by the World Trade Organisation (WTO) to be around 442.3 billion dollars in 2000, representing a share of 9% in world merchandise trade and 40.7 % in the world exports of primary products (WTO International Trade Statistics 2001). A few developed countries responsible for 70% of both exports and imports have dominated this trade. See table 3.

Table 3: Top 15 agricultural exporters and importers, 2000

Exporters	Value (bn)	Share in world (%)	Importers	Value (\$bn)	Share in world (%)
USA	70.87	12.7	USA	66.69	11.0
France	36.52	6.5	Japan	62.19	10.3
Canada	34.79	6.2	Germany	41.54	6.9
Netherlands	34.14	6.1	UK	32.49	5.4
Germany	27.76	5.0	France	30.39	5.0
Belgium	19.86	3.6	Italy	29.39	4.9
Spain	16.88	3.0	Netherlands	20.90	3.5
UK	16.67	3.0	China	19.54	3.2
China	16.38	2.9	Belgium	18.52	3.1
Australia	16.37	2.9	Spain	16.98	2.8
Italy	16.09	2.9	Canada	15.27	2.5
Brazil	15.47	2.8	Korea, Rep. Of	12.99	2.1
Thailand	13.28	2.4	Hong Kong, China	11.73	-
Argentina	11.97	2.2	Mexico	11.06	1.8
Denmark	10.94	2.0	Russia	9.87	1.6

Source: WTO International Trade Statistics 2001, table IV.7, includes intra-EU trade

Despite the growth of global trade in agricultural products, most food is still consumed in the countries where it is produced, except for some typical tropical crops like coffee, cocoa, palm oil, and rubber (Einarsson, 2000. P. 10 – 12). For example, in the case of wheat, which is the largest export crop among the cereals, only 17% of global production is exported. The USA, Australia and Canada share 2/3 of total exports and almost 80% of it is sold to developing countries. And, only 6% of the world's total rice production is exported, mainly by Thailand, Vietnam and China, and for 90% imported by developing countries such as Indonesia, the Philippines, Bangladesh, Iran and Brazil. For coffee on the contrary, 80% of the world's production is exported by Brazil, Vietnam and Colombia and imported by the USA and the EU.²

However not only the quantity of global food trade has changed, also its structure and this evolution during the last century can be distinguished in the following stages:³

- pre-fordism (manufacturism): where factories were established making individual products by individual workers and sometimes entire families. In agriculture the mixed farm was dominating, where still only a minor part of the production was sold, notably wheat. Food consumption is for an important part based on self provision and only specific products are bought on markets and in small shops. For example most people had a few chickens around the house for eggs and meat. A certain separation between food producers and food consumers is however already emerging, due to certain forms of production, storage methods and new forms of faster transport.
- fordism: since 1920 an intensive system of accumulation developed around the mass production of standard products and high wages to a low skilled workforce and later combined with a developing welfare state (Keynesianism) ensuring a market for the goods produced. Homogeneity and standardisation of the products are characteristic for this phase. In agriculture typically large-scale production is becoming dominant (soybean and corn production) and intensive poultry and hog farming is developing, processing the corn and soybeans produced. Food for human consumption is mostly bought at shops and markets, (increasingly supermarkets) and the daily menu is mostly based on standard products. The continuing separation between food producers and food consumers is escalating, leading to a situation where large amounts of cheap foods are available but where producers and consumers of food are also separated in time and space. (Dickens, 1992)
- Post-fordism: since 1980 a flexible system of accumulation is developing in combination with a tendency towards state deregulation and specialisation (small-batch production of a variety of products, the use of flexible machinery and microelectronics and the employment of a skilled and flexible workforce). In agriculture, poultry production with an enormous range of chicken products is an example of the case. But regarding food production and consumption the changing role of retailers is even more important. Labour practices are reconfigured within retailing and redesigning retail-supply chain interfaces. Important changes led by retailers are: technological transformations (the introduction of the 'cool-chain'), reconfiguration of labour practices (part-time by women), and reconfiguring the

² These and the following figures are based on Einarsson, 2000. P. 10 – 12

³ The years mentioned in this division are only indicative. Firstly it concerns processes with no fixed moment of start and finish. Secondly, there are many differences between different parts of the world in this timing. The years mentioned here are based the situation in Western industrialised societies.

retail – supply chain interfaces (global sourcing, requesting large volume suppliers and the move into own-brand products). One interesting example of these changes is ‘relational contracting’: referring ‘to contracts that are based on interactive, flexible and stable supply networks. While the last two features may seem contradictory they designate different temporal dimensions: the day-to-day orders may vary and are thought of as flexible but the contracts are ideally in place for a number of years, which is where the stability enters. It is the time demanded between production and delivery that induced inflexibility, possibly more so for suppliers with Just In Time delivery.’ (Dixon, 2002. p 49) Food consumption is characterised by different styles of consumption and much attention is paid to issues of trust and distrust of food. The welfare state, fundamental to fordism, is dismantling due to the globalisation of the economy and the succeeding need to create global regulatory regimes. (Tickell and Peck, 1995)

These different stages in a continuous process of change result in new social practices, new systems of food provision new food risks and new forms of regulating these risks.⁴

The shifting structure of the production and trade of tropical food crops form a concrete example of some of these changing practices (see Gibbon, 2001). Between 1930 and 1990 the production of tropical food crops like coffee and cocoa, was mostly in the hands of smallholders producing largely undifferentiated crops, where the national state played the role of valorising peasant production through credit-based input schemes, extension services, national systems of quality control and pan-territorial pricing. International trade was dominated by a small number of big trading companies based in the US and Europe. Market relations between these transnational corporations and suppliers predominated over forms of direct control. The major mechanism linking suppliers with these international traders took the form of simple, inclusive quality conventions (international commodity agreements) combining price with certain crude physical crop properties chosen with producers’ or producer-country governments’ involvement.

Around 1980 this structure started to change and by 1990 the world of producing and trading tropical food crops was definitely transformed. International producer cartels had collapsed and public intervention and regulation at national level in developing countries were greatly reduced because of the implementation of structural adjustment programs imposed by the International Monetary Fund (IMF). Private contracts between producers, traders and industrial consumers began to dominate international trade in tropical food crops. The organisation of the producer-trader-networks involved displays a far greater diversity than before. Former state marketing monopolies have dissolved and a variety of different local market structures developed. Market co-ordination was reduced and therefor secularly falling prices have been accompanied by increasing price instability both in international and domestic markets. Reduced market predictability combined with a growing differentiation of consumer tastes resulted in falling margins and increased risks for traders, leading to a strengthening of the bargaining positions of processors and

⁴ New risks arising from the growth of the international food trade can be caused by pathogens that once were confined to a particular region but can now travel around the world on aeroplanes in a matter of hours (for example foot and mouth disease). Also, mistakes in production or processing stages can have large-scale consequences, like dioxins in Belgium (1999) and MPA in Western Europe in 2002. The case of BSE and the debate around GM food are other examples of these new food risks (Oosterveer, 2002).

retailers. Vertical co-ordination by international traders persists and has become more important, accompanied by a proliferation of more direct forms of co-ordination (contracts, certification, etc). The simple matrix linking crop quality and price has disappeared. On the one hand commodities are increasingly sold in undifferentiated forms as inputs for processing industries. While on the other hand, consumer-driven quality conventions are proliferating, distinguishing between products on the basis of origin, production process or certain quality characteristics, combined with increasing attention for the safety of food.

This example shows the changes in the structure of food production and consumption evolving towards increased complexity. The markets and the food products on these markets are differentiating, many more social actors are directly and indirectly involved and more dimensions of food and food production are included in regulations and concerns.

These changing scale and structure of food production and consumption require new ways and forms of regulation of the environmental and food safety risks involved. These new regulatory regimes can not be well understood without a consistent analysis of the principal societal change over the last decades, globalisation.

3. Social theories of globalisation and regulation of food.

During the last fifteen years many social scientists have attempted to make sense of the process of globalisation considered the principal characteristic of society at the beginning of the 21st century. The different theoretical views can be regrouped in different ways depending on the purpose of the overview. In this paper I will review different theories on globalisation with the intention of developing analytical instruments to understand the regulation of food. Although not all theorists have explicitly paid attention to the regulating of food, I will nevertheless attempt to link all different general theoretical views with the specific consequences for the regulation of food.

Based on the classification by Held et al. (1999), I make a distinction between 'hyperglobalisers' and 'transformationalists'.⁵ Hyperglobalisers look at globalisation as a process whereby people everywhere in the world are increasingly becoming subject to the disciplines of the global market place. Transformationalists on the contrary view globalisation as the central driving force behind the rapid social, political and economic changes that are reshaping modern society. However the direction of these changes remains uncertain, since globalisation is conceived of as an essentially contingent (and long-term) historical process replete with contradictions. Hyperglobalisers include Marxists and neo-liberals, but they all see globalisation primarily as an economic phenomenon towards an increasingly integrated global economy whereby the needs of global capital are imposing a neo-liberal economic discipline on all governments. The distinction between the neo-liberals and Marxist-inspired views arise from their assessment of this process. Where neo-liberals see a growth in global welfare, because a more efficient division of labour is possible, neo-Marxists see a growing gap between the winners and the losers on a global scale. World-systems theory and other Marxist-inspired theories consider globalisation as a (new) historical phase in which large corporations are increasingly controlling the

⁵ Held et al. Distinguish a third group of theorists 'the sceptics', but their view seems less relevant in this context.

world economy.⁶ These large private corporations impose their mode of production on a world scale and because of the absence of global regulatory institutions their power is virtually unchallenged. The only opposition to this “process of corporate-led globalisation” is coming from civil society initiatives, like trade and farmers’ unions, environmental NGO’s and anti-globalisation movement. See Robinson (2001), Sklair (1999) and McMichael (1994, 1996, 2001) and for more popularised versions see Klein (2000) and Hertz (2001).

Robinson (2001) considers globalisation as the near culmination of capitalism because capitalist production relations are replacing what remains of all pre-capitalist relations around the globe. With transnational corporations as the central agents, the world is unified into a single mode of production and a single global system based on the organic integration of different countries and regions into a global economy. For example via a global division of labour where factories in developing countries are subordinated to the interests of large multinational corporations and big retailers in developed countries. (Klein, 2000).

By now, both the economic and ecological systems are interconnected at the global level and therefore they demand collective action on a global scale. However, efforts to fill institutional gaps in the global environmental governance system have only been undertaken haphazardly. Hyperglobalists main concern is therefore, that the political reorganisation is lagging behind the economic reorganisation because the political institutions from the era of the nation-states are no longer capable of regulating global flows of goods and capital. Thus in their view new global political institutions are needed to counterbalance global economic power and these institutions are to be elaborated out of contestation and conflicts where transnational civil society can play a central role.

Applying this view to global food trade and to its regulation, hyperglobalistst consider food-producing regions subordinated to the global production and consumption relations organised by transnational food companies. These corporations are attempting to undermine national regulatory policies both in production as well as in trade in their efforts to maximise their comparative advantages in the world market. They do this directly but also indirectly via the WTO because the WTO institutionalises a corporate regime built on a regulatory framework at the international level. Hereby, the WTO undermines the possibility for nation-states to control food markets with the objective to maintain food self-sufficiency and food safety (McMichael, 2000, p. 26). Bonanno et al. (1994) point out that the capitalist penetration in agriculture goes hand in hand with a tendency to replace and substitute natural processes with industrial processes, allowing food products to be transported over longer distances and thus creating the conditions for the expansion and lengthening of food chains. Global chains of food production and consumption, with economic relationships stretching over great distances and material resources and intermediary goods flowing through the world economy, increase the time and space between the origins of environmental neglect and actual environmental consequences and deterioration in specific localities Mol, 2001, p 71). The establishment of a global corporate regime of food production and trade however also leads to the proliferation

⁶ For a long time, social theorists disputed the question whether globalisation is something new or not. I will not go into details here (see Mol 2001 and Held et al. 1999). However here it is important to confirm that global trade (controlled by hegemonic states) has existed before, but that global economic management and global political institutions are new. In addition, although nation-states still exist, their character, role and significance in the world order are different.

of counter-movements, fighting the marginalisation of small farmers and expressing material and discursive conditions like cultural diversity, citizen's rights, food safety and biodiversity. For the majority of the world's population, food is not just an item of consumption but it a way of life with deep material and symbolic power. Food embodies the links between nature, human survival and death, culture and livelihood and is therefore a focus of contention and resistance to a corporate takeover (McMichael, 2000, p. 32).

The regulatory options emanating from these counter-movements have to be distinguished in two opposing views. Some opponents plead for the establishment of some form of global governance authorised by the citizens of the world and capable of controlling the global economic powers (Held, 1995). Other protestors, on the contrary, call for some form of de-linking from the global economy and for the establishment of autonomous communities at local or national level (Halwel 2002).

The main weakness of these hyperglobalist analyses is their one-dimensional perspective of political economy where all power is resulting from the capitalist penetration. This analytical base does not allow sufficient room for studying the cultural or the natural components of the agri-food chain (Murdoch, 2000), nor to for analysing the role of different social actors, notably consumers (Dixon, 2002). In addition the teleological character of the hyperglobalist view leaves no room for contingencies or for divergent changes in different domains and these weaknesses led other social scientists to the elaboration of the transformationalist view.

Transformationalists consider globalization neither as a singular condition nor a linear process, but as a highly differentiated phenomenon involving domains of activity and interaction as diverse as the political, military, economic, cultural, migratory and environmental. Each of these domains involves different patterns of relations and activities (Held et al. 1999, p. 23). Globalisation thus can be understood as embodying processes of structuration and stratification, but largely autonomous within different sites of power and potentially resulting in cultural, economic and political homogenisation, heterogenisation or hybridisation.⁷

According to transformationalists is economic globalisation more than increasing international trade and capital investment because it refers also to changing modes of production and regulation styles, to the internationalisation of competition and to preferential treatment by national or regional governments (Mol 2001, p. 38). A distinction has to be made between the material economic relationships (labour, the production of goods) and the symbolic relationships (financial markets, ideological arenas such as management concepts of flexibility and trade and investments in services). The material economic relationships are changing towards globalised market disciplines, de-localisation of the production of goods and services and the creation of global financial flows (Hoogvelt (1997) and global flows of information and communication (Lash and Urry, 1994). Symbolic relationships are evolving towards post-fordism and other forms of flexible management (Gilmore and Pine, 1999). Trends towards uniformity are present next to and in competition with trends towards diversification (Mol 2001). McMichael (1996) points at the remarkable fact that 'the reach of economic globalization itself is so limited in terms of the populations it includes, and yet its impact is so extensive.' (p. 38) This is precisely so because the restructured states convey the globalisation project to their populations in combination with an increased number of regional and global free trade agreements.

⁷ Globalisation not only concerns an increasing interdependence and interconnectedness emerging around the world but also a growing awareness of this change.

Although Ritzer (1996) claims that a global culture is being created subordinated to global economic interests (McDonaldisation), this global culture is not the same as a uniform culture, because expressions of global culture are always mingled with other cultural expressions and operate in a specific local culture. The cultural dynamics of globalisation should be conceptualised as based on diversity and variety and on the recognition that the influence not always take the form of a top-down process but that local (counter-)culture can become a new kind of global culture. (Mol, 2001 and Franklin, 2000). New developments in technology greatly facilitate global communication, so people may live in one location and have meaningful relationships around the world.

Transformationalists claim: 'we are not living in an unregulated global free market capitalism. Political actors, widespread norms and values are constantly active – with ambivalent results – to redirect global economic processes into less harmful directions' (Mol 2001, p. 116). The world is larger, more diverse, and more substantive than the horizons of globalisation and where the agents of globalisation impose a singular and abstracted logic they do so on a culturally, ecologically, and politically diverse world. As such, globalisation must be conceived of as a historical relationship that is continually undergoing reformulation under pressure from its internal contradictions and from the rising efficacy of a multitude of resistance movements (McMichael, 2001, p. 208). Global politics is not reducible to the sum of traditional political categories such as states and transnational companies, but should include new cultural and institutional frameworks (Mol, 2001).⁸

Held et al. (1999, p. 16) underlines the contingent and multidimensional character of globalisation as 'a set of processes' which embodies a transformation in the spatial organisation of social relations and transactions generating transcontinental or interregional flows and networks of activity, interaction, and the exercise of power. Whereby flows refer to the movements of physical artefacts, people, symbols, tokens and information across space and time and networks refer to regularised or patterned interaction between independent agents, nodes of activity, or sites of power. The flows and networks in globalisation can be described in time and space and also in organisational dimensions. Held et al. (1999) distinguish four spatio-temporal dimensions (1) the extensity of global networks, (2) the intensity of global interconnectedness, (3) the velocity of global flows and (4) the impact propensity of global interconnectedness. With regard to the organisational dimensions they make a distinction between (1) the infrastructure of globalisation, (2) the institutionalisation of global networks and the exercise of power, (3) the pattern of global stratification and (4) the dominant modes of global interaction. Together these eight dimensions crate an analytical framework to study globalisation in a specific domain.

Globalisation processes have real and significant detrimental environmental side-effects, but at the same time, the most innovative and interesting contemporary social transformations are also linked to the design and implementation of global environmental reforms and not part of a continuing dynamics of global environmental crises. Powerful, reflexive, countervailing powers are beginning to get a grip on the

⁸ The issue whether the sovereignty of nation-states is declining (Castells (1997), Held (1995, 1999)) or not (Hoogvelt (2001)) is heavily debated. It seems as though the sovereignty of the nation-state is affected by globalisation without resulting in the withering away of the nation state. Nation-states still remain the central locus of political debate, but at the same time there is a process going on of redefinition and transformation of the relationship between nation-states and global political institutions, structures and actors. The fast increasing number of multilateral agreements consequently limiting the room of manoeuvre for nation-states is the most visible sign of this process.

contradictory developments of environmental reform.⁹ Neo-liberal economics, however, largely fail to clarify these global reform practices and institutional developments, because they deny the existence of structural environmental problems, while Marxist-inspired social scientist only see continuing global environmental deterioration (Mol 2001). Environmental reform is being created in the interplay between economics and markets and actors on the one hand, and (organised) citizen-consumers and political institutions seeking to condition them on the other. This way, environmental considerations become increasingly institutionalised in the economic domain. Nevertheless, political change is needed to force economic actors to integrate environmental concerns in their operations, in the economic sphere itself (producer – consumer relations) and in civil society, creating forms of environmental sub-politics beyond formal compliance with existing legal obligations. ‘Nation-states and national political actors are embedded in broader frameworks of governance and politics, consisting of multiple layers, from local to global, and multiple actors from private firms to non-governmental interest groups’ (Mol 2001, p. 219). The environment is becoming a separate domain of articulated and institutionalised practices also under the conditions of globalisation and via globalisation processes and dynamics, although not in an evolutionary way of success upon success.

Applying the views of transformationalists on food means that the globalisation of agri-food production and consumption is characterised by contradictory tendencies and that it is more fruitful to view this as a mechanism of restructuring and not simply as a patterned process for which outcome is already given. In addition, although there are strong global economic, political and cultural forces at work in a comparable way all over the world, these forces have different local effects (McMichael, 1994 and 1996). Globalisation of food production and consumption can on the one hand be seen in a development towards greater abstraction associated with corporate foods, while on the other hand towards a global trade in fresh and organic food expressing both locality and sustainability (McMichael, 2000). Both the modes of production and the forms and styles of regulation are changing and this should be studied as changes in a network where production, processing, retailing, consumption and regulation are all included. The globalisation of agri-food chains should not be analysed as a one-directional shift of power from communities and nation-states to international institutions such as transnational corporations and multilateral agencies because the production and consumption of food is associated with a wide variety of social practices. Like the observation from Arce and Marsden (1993, p. 301) that different ways exist by which diverse and long-distant localities, almost on a daily basis, socially reconstruct the exchange context of certain types of food. The dynamic influences of consumption should not be underestimated because changes in consumers’ perceptions of nature, health, and tastes generate a scalar dynamic that motivates different types of responses at local levels (in the Third World)’ (Arce and Marsden, 1993. P. 304).

The views from Giddens on globalisation are specifically interesting attention because he emphasises the significance of the new telecommunication and information technologies, which allow acceleration in the compression of time and space and thus

⁹ Multilateral environmental agreements (MEAs) contribute to the emergence of a relatively independent environmental realm in global politics. Nevertheless, regional economic institutions like the EU are of greater relevance because their political institutions and arrangements, originally intended to further economic integration, increasingly include environmental protection and their institutions are stronger than those from MEAs (Mol 2001).

contribute to a qualitative change in globalisation. In particular, it is the growing speed of flows of information (and related flows of money, capital, culture, images, beliefs, ideas, and so on) in the increasingly global networks of production and exchange that has brought about a qualitative change in the world in the past 40 years (Mol, 2001).

Global society as the emergent form of world-interdependence and planetary consciousness has become a believable idea only in the modern age where science, technology, industry and universal values are increasingly creating a contemporary world that is different from any past age. For Giddens globalisation is best conceptualised as a social change leading to intensified world-wide social relations linking distant localities in such a way that local actions are shaped by events occurring many miles away and vice versa (Giddens 1990, p. 64). Globalisation is a process of institutional transformation characterised by unequal development, simultaneously fragmenting and co-ordinating, where the final outcome is not pre-determined. Social relationships are becoming disembedded, no longer primarily based on local contexts of interaction but recombined across time and space and the relations between local and distant social forms and events become correspondingly stretched (Giddens, 1990). Giddens considers globalisation as narrowly related to a specific phase of late-modern society where transformations are taking place in four institutional clusters: capitalism, industrialism, surveillance through the nation-state, and the military order (monopolising violence in the hands of the state). This new phase in modernity, is called reflexive modernisation because reflexivity refers to the constant re-examining and reshaping of social practices in the light of new incoming information about those very practices. Reflexive modernisation marks the end of the idea that social and natural environments will be increasingly subjected to rational ordering. (Giddens 1990, 1991, 1994 and Mol 2001) Uncertainty and anxiety are becoming central features in reflexive modernity and everybody is concerned with global environmental risks. Although unequal distributions of these risks are still very relevant, they follow new distributional patterns and not the traditional class-based ones (Beck 1999 and Mol, 2001, p. 81). Increased uncertainty and anxiety in globalising societies can have profound social and individual consequences (see Bauman 2000).

Castells (1997) uses the concept of 'network society' to characterise globalisation in combination with the notions timeless time and space of flows. The network society is a society where a 'networked, ahistorical space of flows is aiming at imposing its logic over scattered, segmented places, increasingly unrelated to each other, less and less able to share cultural codes' (Castells 1997, p. 428). Timeless time refers to the de-linking of time from social processes, while the space of flows refers to the de-linking of social behaviour from specific geographical locations.

According to Castells, physical space is less and flows are becoming more important: space of flows. Applying this thesis to agri-food networks, this means that the physical distance between food production and consumption is of less relevance than in the past, while the flow of information is becoming much more important. This process is the consequence of increased communication, decreasing costs and time of transport, and improved ways to maintain the quality of food products. This is both true for the mass production of raw material (soybeans, maize) as inputs for food production in general as well as for high quality products, like tropical fruits and vegetables. The organisation of transport may be different (bulk transport by boat or the use of aeroplanes), but products are transported all over the globe.

Communication and transport allow networking between places at a distance. In the centre of these networks are the large retailers located in the US, the EU and in Japan. Analysing food production, food processing and food retailing and consumption needs to start with analysing the networks linking these different activities. Networks and the relations between different actors and activities within them influence the activities at specific places and their changes over time.¹⁰ Globalised agri-food networks create a specific space of flows of food production and consumption, as 'each network defines its sites according to the characteristics of the product or service to be processed in the network' (Castells 1996, p. 414). Globalisation of food production and consumption is leading to increasing disengagement of agri-food networks from their location-bounded origins or contexts. Agriculture is less and less identified with place and country (McMichael, 1994), but at the same time place (in the sense of the space of places as defined by Castells) still exists, because the overwhelming majority of people still lives in specific places and perceive their space as place-based. Fine (1998) stresses the organic character of both food production and consumption and Goodman (1999, p. 18) talks about the 'corporeality: to signify organic, eco-social processes that are intrinsic to agriculture and to food'.

The tension between the space of flows and the space of place is creating continuous problems between local production practices and global consumption, as well as between global production and local consumption practices. According to Castells this tension forms a fundamental problem for our society because 'the relationships between the space of flows and the space of places, between simultaneous globalization and localization are not predetermined in their outcome' (Castells 1996, p. 425). Cultural and physical bridges have to be created between the networked a-historical space of flows and the scattered, segmented space of places, because otherwise two different, unrelated worlds are created. This is even more important in the case of food because of the material character of food itself, its cultural and human values and its localised production conditions.

Castells also includes the concept of 'timeless time' to describe the network society, because systemic perturbation is induced in the sequential order of phenomena through the informational paradigm. Timeless time is a new concept of temporality, mixing tenses to a forever universe, self-maintaining, random and incursive. (Castells, 1996. P. 433) In the economic sphere this means time-space compression and a flexible workforce (for just in time production) and in the social sphere the breaking down of rhythmicity because biological rhythms or social categories are no longer determining life. In the cultural sphere temporality is undifferentiated (at the same time eternal and ephemeral) leading to cultural hybridisation. An example related to our topic is the disappearance of agricultural seasons for western consumers because nearly all food can be bought fresh and/or processed in supermarkets throughout the year. Another example is the synchronisation of time between different actors involved in mango trade where it is necessary to achieve an estimated time of twenty-three days between harvest and actual consumption of a mango. (Marsden, 1997. P. 176). This synchronisation is not linked to the specific contexts in which production, trade and consumption is taking place.

¹⁰ It would for example be incomprehensible to think about how 'fair trade' coffee production and consumption would have looked like in 1859, although this is the year when Multatuli first published his book: 'Max Havelaar'. The Max Havelaar trademark was only used for fair trade coffee in 1986. Fair trade coffee is only possible in the modern globalised coffee-network.

However, not all people are living in timeless time and many still live in places with time discipline, biological time and socially determined sequencing. Thus, a ‘contrasting logic (exists) between timelessness, structured by the space of flows, and multiple, subordinated temporalities, associated with the space of places’ (Castells 1996, p. 468).

The network society is according to Castells (1996, p. 468) characterised by a structural tension between the space of flows and the space of place, by ‘the contrasting logic between timelessness, structured by the space of flows, and multiple, subordinated temporalities, associated with the space of places.’ This tension also extends to the domain of food production and consumption, where a friction exists between social practices based on globalised agri-food trade and local production and consumption practices. See figure 1. Practices of food regulation are a clear example of this tension, because the regulation of food in the space of flows differs fundamentally from the regulation of food in the space of flows.

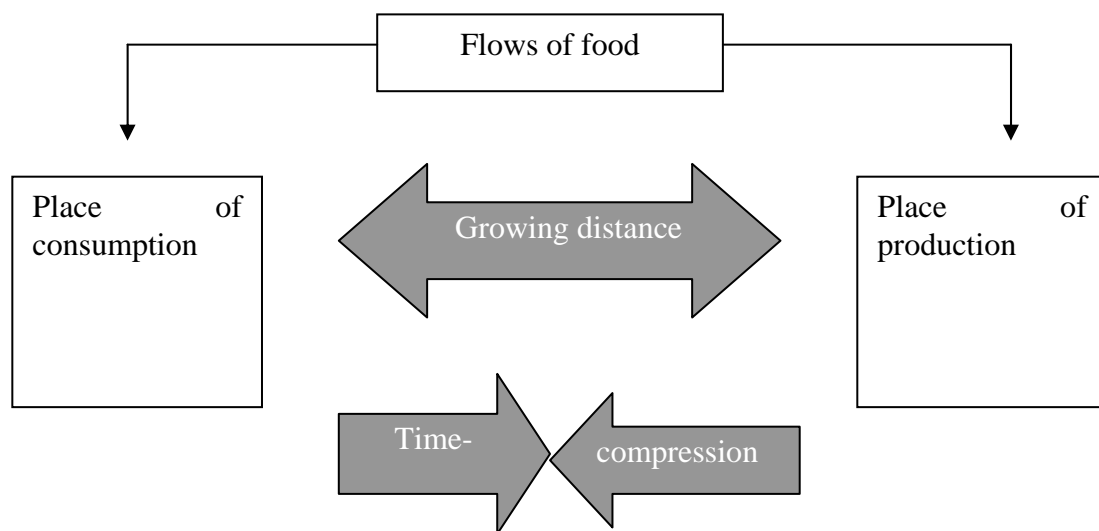


Figure 1. Flows and places in globalised food production and consumption

The regulation in of food production and consumption in the space of flows, developed within both formal political regimes as well as by some forms of sub-politics, is not based on specific time and place considerations. Therefore, most regulations in flows are procedural combined with prescriptions for production and control systems. Environmental and food risks and their regulation are defined as part of global agri-food chains. For example product production methods (ppm’s) are left out of WTO regulations on food, that are limited to objective product characteristics.¹¹ Within the flow of food the same food product that is safe at one place can not be unsafe at another.

Despite persistent resistance, since the Uruguay-round, agriculture and food trade have become part of the WTO via the Agreement on Agriculture, initiating a new form of regulation at the global level. The global food policy regime according to the

¹¹ See also the observation by Gorris (2002, p. 9): ‘In 1991, the FAO and the WHO communicated that transparent, science-based and internationally recognised standard approaches to risk assessment are needed and that they should be consistently applied across the board .’

WTO should be based regulation in flows and on free trade, allowing the reassertion of comparative advantages.

Retailers are contributing to the more abstract forms of regulation to reduce food risks and (re)create consumer trust, while simultaneously facilitating global food trade via the use of certification schemes, like ISO 14001, HACCP and GAP. These certification schemes are based on management standards and certain procedures for quality control and have a form of spacelessness and timelessness because they need to be globally applicable and recognised universally.

Despite these different initiatives, regulating agri-food networks completely within the space of flows is not yet possible, because the material character of food denies for the foreseeable future the option to denounce place and time altogether.

The regulation in of food production and consumption in the space of place is based on specific, place- and sometimes also time-bounded characteristics. For example, only a farmer in a specific region can produce regional products and his products need to be identifiable all through the chain. This form of regulation can be multidimensional and bring in food safety as well as environmental and social concerns for example 'organic food'. NGO's and producer and consumer groups are looking for ways to link food safety regulation to specific social practices via new forms of labelling and of direct contacts between food producers and consumers.

Food safety risks and the environmental and social consequences involved in food production are often directly linked to specific and concrete production practices.¹² Whether eggs, poultry or beef are produced taking animal welfare into account is detectable only by a label indicating the production circumstances, like with fish produced by sustainable fisheries, fair-traded products, or GM food. Some observers consider these fairly traded and organic labelled food products as an alternative countering the organisation of production and trade around abstract market principles via agri-food networks where ecological and social relations are explicitly taken into consideration and where consumers, traders and producers take different positions (Raynolds 2000).¹³ Agri-food networks are re-embedded within ecological and social relations, revealing more fully the conditions of production and requiring consumers to shoulder a greater share of the true production costs.¹⁴ Organic foods imports from developing countries to the West are valued around 500 million dollars per year and fair traded products (of which food products cover 60%) have an annual market value of 400 million dollar.¹⁵ Consumer concerns in the developed countries are regarded as the prime movers in the development of these alternative agri-food networks.

Regulating food production and consumption only based on regulation in the space of place is vulnerable because closely controlled production, processing and retailing channels are needed to maintain its specific identity, while a continuous pressure exists to enlarge the market. In addition, the trend towards globalisation, towards

¹² See again Gorris (2002, p. 19): 'A risk can only be characterised truly in it's particular context.'

¹³ A challenging question is whether re-embedding agri-food networks in ecological and social conditions of production can be achieved via changes at the market level alone, or whether new consumer/producer links form an essential part. (Raynolds, 2000. P. 299) If this latter is the case regulation in place would be even more different from regulation in flows.

¹⁴ These initiatives are greatly enhanced by the rise of global information technology. Communication and the distribution of information have become easily accessible and at much lower costs than 10 years ago.

¹⁵ Organic agriculture represents a system of farm management based on natural methods of enhancing soil fertility and resisting disease, rejection of synthetic fertilisers and pesticides, and minimisation of damage to the environment and wildlife. And fair trade tries to transform North/South trade to a vehicle of sustainable development. (Raynolds, 2000)

spaceless and timeless products remains very dominant weakening the place and time bounded character of forms of regulation in place.

Concluding that the regulation of food can neither be achieved completely via the regulation in the space of flows nor completely via the regulation in the space of place, the central challenge at the moment is to identify options to combine both as shown in figure 2.

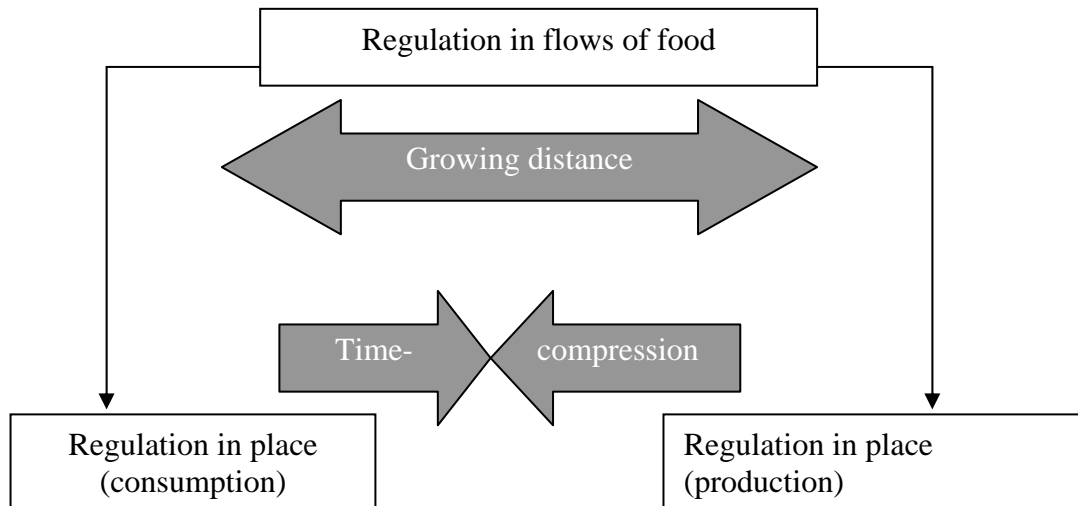


Figure 2. Regulation of globalised food production and consumption.

However before attempting to identify ways to bridge the gap between both forms of regulation, we need to improve our analytical tools to better understand the regulation of food production and consumption.

4. Analysing agri-food networks.

Analysing globalisation in food production and consumption requires not only refined understanding of the globalisation process, but also tools to come to grips with changes in food production and consumption and with changes in regulatory practices.

Different concepts such as ‘systems of provision’, ‘commodity chains’ and ‘food networks’ have been used to describe the complex social and economic relations involved in the production, processing, distribution and consumption of food.

The concept of system of provision (Fine, 1998) underlines the linkages between different activities making up the food system and as different food systems need to be distinguished because each is structured and evolving in another way. The main weakness of the concept ‘system of provision’ lies in the arbitrariness when distinguishing between different food systems. For example where coffee, sugar and milk are all elements of drinking coffee, they may be considered part of three different food systems.

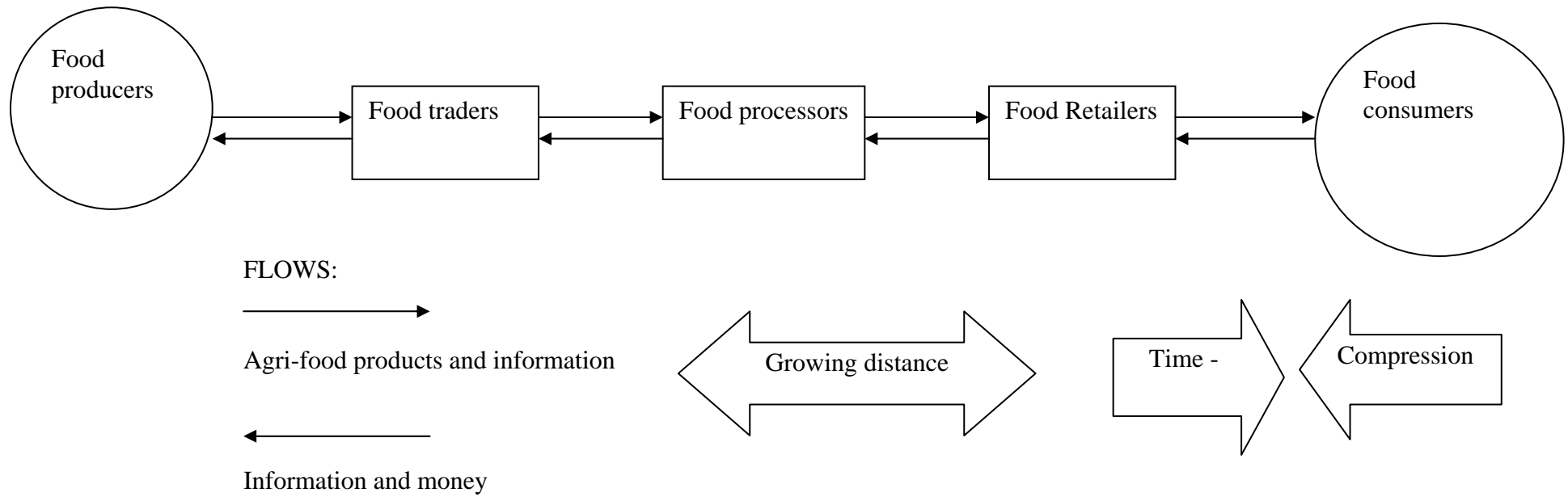
The focus of commodity chain analysis is on the processes of industrial transformation occurring at the different stages in the food chain with specific

attention for the rate of capitalist penetration transforming traditional agricultural production (Friedland, et al. 1981 and Murdoch, 2000).

With the use of actor network theory (ANT) several authors attempt to dissolve dichotomies between macro- and micro-levels in sociological analysis and between the social and the natural as distinct spheres while analysing food production and consumption. In temporally and spatially situated sites, actants are linked together into actor-networks (Lockie and Kitto, 2000). These actants involve human beings, but also nature and technology, considered *hybrids* of nature and culture. However, although decentring human agency seems attractive while studying environmental issues, it remains unclear how the agency from non-human actors can be included in social science. As Marsden (2000, p. 23, underlined in original) states ‘it is the social actors who are the *only* actors who have the power to endow different types of ‘actor status’ on to natural properties. Such a recognition is not *socially reductionist* but rather *socially inclusive*.’

Nevertheless, building on this attempt to link the different located social practices of food production and consumption; the network concept is useful because it allows the analysis of different social practices at different locations within the network in close relationship with the connections in the network themselves. An agri-food network can be considered a social system, characterised by time-space distantiation and reproduced in and by contextualised social practices (Van der Meulen, 2000, and Dicken et al, 2001). See figure 3 for a graphic representation of agri-food networks and figure 4 for an overview of the main social practices implicated.

Figure 3: Agri-food networks:



All stages are linked to specific economic, political and cultural arrangements.

Figure 4: Main social practices involved in agri-food networks:

PRODUCTION PROCESSES:

- primary and secondary production practices,
- grower organisation(s),
- organisation of labour in production,
- science and technology production and application,
- product design,
- regulatory politics

DISTRIBUTION PROCESSES:

- supermarket retailing practices and organisation,
- food services sector organisation and practices,
- retailer-led product development,
- marketing and distribution networks,
- organisation of labour in distribution,
- food knowledge and discourse production,
- regulatory politics.

CONSUMPTION PROCESSES:

- tertiary production practices,
- means of access,
- manner of delivery,
- food preparation practices and technology
- the eating environment,
- the eating experience.

Source: Dixon (2002), p. 57.

Based on a combination of Friedland's Commodity Systems Analysis (CSA) and Warde's analysis of consumption processes.

This selective overview of social practices shows the complexity of agri-food networks and the difficulties social scientists encounter when studying concrete food production and consumption activities. However, based on this overview of the practices involved a social scientist is able to make a conscious selection.

Understanding agri-food networks needs analysing both the material and the symbolic characteristics of food to avoid too simplistic presumptions about the location of power in the production and consumption of food. The highly differentiated co-ordination and actions of the human and institutional actors involved in agri-food networks are influencing the construction, transfer, quality and value of food. Regulatory agencies, private consultants, category managers, retail buyers, wholesalers, marketeers, groups of farmers and consumers all involved to different degrees, hold and project varying natural and social conceptions of the same food objects (Marsden, 2000).

The network concept allows us to look at power relations involved in the regulation of food both in a structural and in a relational sense (Dicken et al, 2001. P. 94).

5. Regulation of food.

Modern regulation of food safety began in the late nineteenth century as a result of a growing public unrest about the then common adulteration of foodstuffs, for instance by adding water to milk or skimming off the cream. Governments were forced to define the legally acceptable composition of some foods and local authorities were empowered to analyse samples to detect fraud (Atkins and Bowler, 2001). Specific attention from regulatory authorities has gone to the use of food additives, because their use has grown tremendously in the increased industrialisation of the production process.¹⁶ In the general context of political de-regulation during the 1980s and the 1990s, the agri-food sector formed an exception. Food and environmental risks in agriculture have initiated particular forms of 're-regulation' concerning food safety and private systems of quality control. Over the years the number and complexity of food regulations have increased tremendously. Legal requirements and formal regulations are elaborated in detail and new developments in science and technology in general and in communication-technology in particular mean a growing capacity to regulate food safety. Scientific knowledge about food risks and about ways to reduce them is increasing and tends to get rapidly translated into regulations.

Nevertheless, formal political regulation of the new food risks is not sufficient to take care of public anxieties about the safety of food and the social and environmental consequences of its production, processing and retailing. So besides official risk politics other forms of risk politics outside the formal political domain are developing, called sub-politics (Beck, 1997). Supermarkets exercise a degree of control over their suppliers that would have seemed impossible only 20 or 30 years ago. Their quality control schemes cover the range from the production conditions on the farm, via those in the processing or packaging plants, to the supermarket shelves. Consumers too are exercising their power to improve food safety and the negative environmental and

¹⁶ 'Around 3.800 additives are used in our daily food, for three basic purposes. First, there are cosmetic chemicals that make products look more attractive to the senses, especially colouring agents, flavours, sweeteners and texture modifiers, such as emulsifiers and stabilisers. Second, there are preservatives, including antioxidants and sequestrants, which add life to a product. Third, processing aids assist the manufacturing process, for instance by preventing food from sticking to machinery. About 380 of these additives had officially been approved by the EU by 1987.' (Atkins and Bowler, (2001) p. 215)

social impacts of global food trade, for example though buying food labelled as ‘fair traded’ or ‘organically produced’.

Food risks are defined and food regulations are enforced through more actors in different social practices, all part of global food networks and having different resources of power at their disposal. The triad network as elaborated by Mol (1995) distinguishing between economic, political and societal networks allows the inclusion of more social actors in analysing the way food risks are defined and regulated.

6. Conclusion

The process of globalisation of agri-food production, processing, retailing and consumption is creating new agri-food networks. Globalised agri-food networks are based on flows of information, money and food products, but also on specific localised and time-bounded practices. The tension between space of flows and space of place in globalising agri-food networks leads towards two different principles of regulation: regulation in flows and regulation in place.

At the same time, these globalised agri-food networks incite the creation of new risks, due to material changes in combination with increasing scientific knowledge and consumer concerns and intensifying communication. Risk politics based on national political regulation are no longer adequate and new forms of risk politics are developing in an effort to do justice to the important role of non-state actors in preventing and managing risks and to fit into the changing structures of agri-food networks. Formal national political regulation of food related risks is increasingly combined with forms of international regulation and of sub-politics by private corporations, NGO's and consumers. Both modes of regulation exist and social actors are reproducing and developing them, depending on the specific social practices in which they are involved and on the power resources they can mobilise within these different social practices.

An analysis of environmental and food safety regulation in the context of the globalised economy needs to build on these assessments.

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