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Managing pests, consumers, and commitments: the case of apple growers and pear growers in Belgium's Lower Meuse region

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Abstract. The authors analyse the construction of a seed fruit market. The conventional market had led to the 'anonymousness' of the fruit and to disconnected temporalities. The process needs new types of coordination and components within the common information channels and actors' network. It also needs the construction of a new contract between producers and consumers, that the conventional market is unable to allow. Producers are experimenting with direct contact with the final consumer to find ways of allowing it. The fruit is replaced in the subject's experience of the final consumer and in the grower's story. The grower's story deals with managing pests, consumers, and commitments through a harmless action: eating a pear or an apple.

Introduction

In this paper we analyse a strategy by means of which fruit growers are trying to get consumers to recognise the quality of their produce. This strategy is part of a story that has led them from conventional production to integrated production within a conventional market circuit. The problems that they encountered led them to try to restore direct contact with consumers—not through a short sales circuit, but by short-circuiting the information channels that subtend and make the marketing circuit possible. In this they have developed a special way of approaching consumers: communicating with their subjective experiences and making them part of a common story through types of mediation that are very different from those of the conventional or 'certified' market circuits.

Problem: is eating an apple or a pear such a harmless action?

What could be more insignificant than biting into an apple or pear? Today's markets are quite different from the local ones embedded in social and geographical relations of towns and villages, building, through personal links, both competencies and knowledge about fruits, their use, and what specifies a variety. In this sense, the local market defined consuming as a public, continual, and communal action. In today's overabundant competing markets, consuming is a private, one-off, isolated, action that involves no communication between the producer and consumer except through the abstract references of the brand, label, and a few signals of quality, that is, through a chain of intermediaries that subtends each party's judgment (Hennion, 1993). What consumer could list all of the intermediate trades that handled the fruit in what is commonly called a chain of production and marketing?

Yet a marketing circuit calls for a minimum number of means of identifying the products, for a market cannot operate without identifying, grading, and qualifying the objects that it puts into circulation. The physical circulation of produce thus entails not only a series of physical operations (transport, handling, and sorting) and economic operations (setting sales prices, large-scale circulation, etc), but also the circulation of information based on the coding operations that are indispensable for

determining the qualification of the produce. Market circulation is not possible without the attendant circulation of information. However, these processes of qualification, which are delegated to professionals, machines, or sorting grids, are not simply added to existing production or consumption: they have a series of effects. First, they transform the components of the production-and-marketing chain and configure their reciprocal relationships. Production patterns, the characteristics of the products, and consumption patterns alike are redefined by these dual physical and information flows. The extension of the market circuits multiplies these operations and renders the consumed product abstract—detaches it from part of its story (Latour, 1999a). This is translated by the differences in the various partners' time frames, which also affect the possibilities of coping with crises and change.

We use these hypotheses to guide the study of a case in which a series of crises has led producers to try to reestablish direct contact with consumers and, in so doing, develop a strategy of short-circuiting the information channels.

Constructing a market

In this section we analyse the processes and consequences of the construction of the fresh fruit industrial market. This process had led both to a new type of coordination between actors (multiplication of intermediaries) and to the advent of new components (fruits, trees, pesticides).

The Lower Meuse Regions extends along the left and right banks of the Meuse River, from some 15 km north of Liège to the Dutch border. It is considered to be one of the cradles of apple and pear growing in Belgium. The hardcore group of orchard operators behind the story that we relate briefly in this paper comes from this region. Here, fruit growing was traditionally an extensive small-farm activity, complementing beef herding and dairying. The farmer had an orchard that doubled as a pasture for cattle. The fruit that was harvested was for family use, with part of it sold locally (to neighbours, friends, or passers by) so as to procure a little additional income.

A new type of coordination

The opening up of outlets in neighbouring countries leads to the first structuring of the fresh fruit market process, that is, the creation of the first *criées* (auction sale associations).[1] The criée is a growers' cooperative set up to coordinate supply with the buyers' demand, that is, the demand of the wholesalers and exporters. This coordination is achieved through a system for assessing the quality of the fruit by comparison with similar batches of fruit. In the beginning, the most common sales mechanism was the so-called 'clock' method. In this, the potential buyers assembled in one place, the batches were put up for sale, and the prices were determined by the highest bids made during the time allotted for the selling—hence the term 'to sell by the clock' (*vente à l'horloge*).

New auction-sale associations sprang up and were gradually merged, while the marketing circuits became more complex and were restructured by, among other

[1] The opening up of outlets in neighbouring countries is the first structuring of the fresh fruit market process and leads to the organisation of sales systems, and the advent of specialised wholesalers and exporters. Despite the changes underway, fruit growing remained basically a small-scale activity practiced in orchards with high-branching trees, characterised by relatively low yields and very high costs. The standard, or high-branching, tree has a cyclical yield that varies from one year to the next, with a bumper crop followed by a poor season. It does not start to bear fruit until it is 6 years old. The height of the tree makes harvesting difficult, slow, and costly. The fruit is harvested by specialised crews who hire themselves out to the farmers. This production model remained the rule for several decades, roughly from 1930 to 1960; it was not until the 1960s that fruit growing underwent a second restructuring.

things, the advent of distribution and purchasing unions. The market was thus reorganised little by little, in a process of multiplication of intermediaries, and also by the gradual adjustment of the production system to meet changing consumer demand.

As a result, selling fruit—though this process is not specific to the fruit sector—was no longer a local market matter based on direct contact between growers and consumers, but the work of a market that had largely lost its local character and was based on intermediaries specialised in buying and selling fresh fruit who would distribute the fruit across an open area. The need for a flexible speedy supply of fruit and its distribution in an open market, required special organisational forms to match supply and demand.

Selling was thus organised to meet market needs, that is, quick flows, long-distance transport, and the need for standards for assessing fruit quality in order to set prices. The auction-sale association, which was a central operator, organised the sale transaction by various mechanisms: selling by the clock (vente à l'horloge), simultaneous selling (*vente simultanée*), and selling by contract (*vente par contrat*). The fruit here was no longer the fruit from a particular orchard, but a batch of fruit—the price of which was set according to specific criteria.

Trade needs, especially those of the distributors, required the existence of large warehouse reserves at all times, and thus a specific logistic supply involving a large and flexible range of varieties. Isolated growers would have difficulty providing such a service, given not only the irregularity of orders (fluctuations in demand, varieties in demand, calibre desired, etc), but also their own limited logistic and production capacities. The changes that took place in the fruit trade thus justified the work of operators such as the auction-sale association, which could provide the required services (management of large stocks, management of sorting, and transport operations).

This vast operation thus led to a transformation in the coordination of the market. The market thus changed from one of familiarity between the grower and consumer, and fruit constructed primarily by history and direct contact, to a market regimen subject to demands of speed and large-scale transport requiring standardised quality assessment, which was affected to a great extent by the consumers' demands as relayed by the shops (Thévenot, 1994).

New components

The transformation of the marketing chain modified the entities that were involved. What new components were introduced into the system?

The fruit and the tree

The selection of varieties was redefined by market demand for quality, which was based on the criteria of: colour (external appearance of the fruit); consistency of the flesh (firmness); and taste (sweet or tart). The Jonagold, which is the most widely grown apple in Belgium, is the result of crossing the Jonathan with the Golden. This cross was performed in order to unite the 'essential characteristics' of the two varieties, that is, the firm flesh and tart taste of the Golden with the red colour of the Jonathan, in one variety that would meet market requirements. Jonagold trees account for about 50% of Belgium's apple orchards, and the Conference pear accounts for approximately 75% of the country's pear output. The selection programme thus consisted of either crossing existing varieties, or choosing a specific variety; this is how the two most widely grown varieties in Belgium, the Jonagold apple and Conference pear, were developed.

The most important feature of this process is that it involved primarily the aforementioned characteristics, without allowing for the behaviour of the fruit in the orchard. Unfortunately, the Jonagold apple is susceptible to various fungal diseases, such as apple scab, and pests, such as the apple-leaf sucker and the red spider mite.

The behavioural characteristics of the fruit are exacerbated by weather conditions. For example, the frequent alternation of wet and dry periods in Belgium promotes the development of apple scab on Jonagolds. The alternation of cool nights and sunny days at harvest time is required for the variety to have a bright red colour, which results from the 'stress' of the fruit ('stress' is the word used by the growers and technical experts).

The choice of such a variety was, of course, supported by the market. However, it called for special orchard operations linked to the behavioural characteristics of the fruit.

So, the farmers switched to planting spur-type or dwarf trees, which were more productive than the standard tree. This made picking the fruit easier, but imposed more difficult cropping constraints, especially with regard to weather conditions: warm periods, which in the Lower Meuse are frequent in May and June, trigger excessive growth spurts which had to be controlled.

The introduction of new varieties and the large-scale planting of dwarf or spur-type trees thus improved the growers' market prospects greatly (a) high yields of the fruits and orchards (the orchard yields are from 30 to 35 tonnes ha^{-1} for the Jonagold, and from 35 to 40 tonnes ha^{-1} for the Conference pear); and (b) supply that meets the market demand. But there were new production constraints too (tree growth habit and orchard-management problems) that were largely masked by the massive use of man-made pesticides.

New entities and critical components

Although the reorganisation of the market gave the growers new resources, it also generated some critical points and the management of these gradually become problematic in a context of increased need for profitable orchard operations. Apple-scab control thus called for numerous sprayings of chemicals, be they preventive or curative. The excessive growth of the tree called for spraying with growth regulators to limit tree growth and to maintain a sufficient number of fruits for the coming harvest.

The need to control apple scab is predicated essentially by the fact that, if apple scab is not controlled, it changes the appearance of the fruit through the development of rough patches on the skin. This changes the grade of the fruit to a variety of degrees, up to and including it from the commercial circuit. The use of a growth regulator is required because letting a dwarf or spur-type tree grow uncontrolled will lead to a partial fall of its fruit, which reduces the harvest and thus the profitability of the orchard.

The orchard operator's practice was thus subject to the market-induced demands for productivity and profitability. These two requirements were met by a series of practical intermediaries (Callon, 1986), that is, man-made pesticides. These pesticides, which were developed in the 1950s, would be challenged a few years later (Boltanski and Thévenot, 1991; Thévenot, 2000) and become a source of embarrassment (Latour, 1999b) when concern with the environment and health became widespread.

The information channels and actors network

In this section we analyse the needs of the fresh fruit industrial markets (standardised fruit evaluation, specific sales systems) and two breaks which are involved in the process of industrialisation (anonymous fruit, disconnected temporalities). We briefly describe the context in which a few growers in the Lower Meuse Region rallied to 'integrated pest management' to address questions raised by the use of one of the new industrial components (pesticides).

As a result of the changes in the fruit market, a steady circular flow of information throughout the complex chain of operators became necessary. The format of the information had to be such that it was possible to gauge the quality of the fruit quickly and thus set the price accordingly. This was achieved by standardised fruit evaluation and grading systems and specific sales mechanisms in which the price was the final signal. The fruit was thus allowed to circulate in a broader area based on recognised criteria, but it could be handled by intermediaries thanks to its stabilised identity.

In a market circuit, maintaining this quality calls for alignment (Callon, 1986). The process by means of which the quality of the fruit was assessed relied on the alignment of technical instruments (the sugar content is measured by a refractometer, and firmness by a penetrometer)—from picking to arrival in the auction room and the establishment of the batches put up for sale—to measure the sugar content, firmness and crispness, colour, and size of the fruit. Combining the indices produced by these technical instruments yielded a fruit-grading scheme governed by specific, commonly accepted, rules. Assigning the fruit and batch to a specific category then made it possible for the sales price to be set quickly.

This is a need that also refers back to the first constraint on the wide-scale distribution of the fruit: that of broad validity, meaning agreement about fruit quality and its translation into price. Indeed, at the time, the fruit was circulating towards distributors' points of sale that were generally spread over the entire country. The fruit was then offered for sale under slightly different classification schemes that depended on each distributor's policy. Most of the time, the fruit was presented in bulk or prewrapped in packages of four or six fruits. Each crate or package bore a label giving the geographical origin of the batch (Belgium, the Netherlands, Germany, France, etc), the category, packing date, price per kilogram, name of the variety, calibre, and the registration number of the auction-sale association or grower. The auction-sale cooperative registration number sometimes replaced that of the grower—for example, when the grower did not have a registration number, or when the batch was composed of fruits from different farms. The identification system thus traced the itinerary of the fruit from the orchard or orchards from which the batch came down to the retailer's stall.

Although the two constraints of broad validity and rapid transactions corresponded to the needs of trade in open markets, they created two breaks: one in the identity of the fruit; the other in the grower's, distributor's, and consumer's time frames of action, which were different.

What are these two market-orchestrated breaks?

Break 1: fruit that is identifiable and traceable, but anonymous in the eyes of the consumer
Once the fruit reaches the retailer's stall, the only thing that links it to the grower is an identification code, that is, the grower's or cooperative auction's registration number. This coding system is necessary to trace the fruit and register the transactions. It makes it possible to trace the itinerary of the fruit, if necessary, from the orchard to the point of sale. Although this system is useful, given the needs and possible consequences of an open market (price setting, product traceability, and identification of defects), such a system cannot be used to address questions about who the grower is, what the fruit-production methods are, or what is the exact location of the supplying orchard. The identity of the fruit, although stabilised, thus leaves unanswered questions such as the name of the grower (who is the 'manufacturer') at the same time as it detaches from part of its production history (climatic and soil constraints, varietal constraints, orchard or production method, etc).

The first break thus comes from this process of rendering the fruit anonymous, which is organised to meet market needs. The system does, of course, make it possible to trace the fruit back to the grower whose output went into a batch of fruit, but it is expressed in the offputting, meaningless, form of a row of digits on a label—the grower's or cooperative auction's registration number. This code is on the label, but what consumer can grasp its meaning, and by what operation could the grower adjust to the consumer's world of relevance through such a device? The fruit is indeed identifiable, but anonymously

> "1. Nameless, of unknown name; impersonal, not individuated. 2. Of unknown or undeclared source or authorship" *The New Shorter Oxford English Dictionary* 1993).

The fruit is without a story and without direct connections to the grower: it is formatted solely for the needs of the movement of goods and coordination of the industrial market—a system that has hardly any meaning when it is held up to the end-user's scrutiny.

Break 2: disconnected temporalities

The second break is the disconnection of the timeframes of the growers', distributors', and consumers' actions. This is disconnection between a long production time (the orchard growing over several years, production over a season), a short distribution time (almost daily market fluctuations), and the immediacy of the consumer's act of buying.

Fruit undergoes numerous handlings and interventions in the orchard. The quality of the fruit is built up little by little, from the bursting of the buds that takes place in February, to harvesting, which is usually in September but depends on the meteorological conditions and the physiological processes and behaviour of the variety and orchard. The growers' and technical advisors' work is conducted on a daily basis and gives each of them the difficult task of handling a living object that is constantly changing. Such activities are conducted in a world in which time is counted in weeks or months. Making use of favourable weather conditions to apply a pesticide most effectively, or to avoid pronounced pesticide residues; taking advantage of the setting-out of beehives to facilitate pollination; facilitating the installation of a natural predator so as to reduce pesticide application; living with the damage caused by a late frost or a hailstorm—all these turn the daily activities conducted in the orchard into work that is largely determined by the unpredictability of nature but is also determined by the relative inertia of the production system, including: time necessary to plant a different variety, or, at the extreme, the impossibility of influencing production factors such as the weather and the biology or physiology of the tree or fruit. In addition to the natural ups and downs of growing fruit, one has to deal with the rigidity of the production system in responding to sudden changes in the market: the grower is, for the most part, unable to adjust quickly to market needs. The long time spans and rigidity of the production system oppose the short time spans and flexibility of the market.

Although batch traceability enables one to identify the fruit and their growers and to assign them a quality as measured by instruments, the fruit is nevertheless cut off from its own story. This break is so complete—in the sense that this story is not taken into account in the procedures of qualification of the market—that the consumer's perception and judgment criteria are in large part blind to the production conditions and activity of the grower. Enormous coordination has thus been instated in the production and marketing chain. This coordination, which is required by large-scale transport, is achieved by stabilised reference points and is reflected in the prices. However, this strong coordination itself rests upon the erasure of the specific

production conditions and thus on a twofold break that we have called the anonymity of the fruit and the disconnection of time frames.

This twofold break appears only when the quality of the fruit is challenged on the basis of criteria that had not previously been taken into account. For example, consumer health and/or environmental concerns have been challenging the use of pesticides that is instrumental in enabling the grower to cope with the quality demands of the market within the constraints of production methods. This type of process has affected the fruit sector over the past score of years. Articles in the press, as well as conflicts between neighbours, have challenged the practice of widespread spraying and the most readily identifiable perpetrators of such 'crimes', that is, the growers, at whom people point their fingers and who are accused of poisoning their neighbours. These facts were recounted by the president of a group who was a grower at the time.

Towards another contract!

This is the context in which a few growers in the Lower Meuse Region rallied to a programme of work known at the time as 'integrated pest management'. Integrated pest management is practiced in several countries, including France, Italy, and Switzerland. It consists of a method of work aimed at three things: the reduction of pesticide spraying, the giving of preference to biological pest-control methods, and the development of cropping techniques (pruning, fertilizer applications, etc). This programme began in the 1950s. Integrated pest management calls for a significant change in the production system on the farm, that is, technical supervision of the farmers, the acquisition of new skills (observing the orchard, applying chemicals more effectively, etc), and, third, changes in much of what makes up the farmer's daily practices. Such change would be supported appropriately if it were acknowledged by the market price structure and rewarded accordingly. Although integrated pest management has the official recognition of the International Organization for Biological Pest Control, it is little known in Belgium—especially to the fresh fruit traders, who are the main group with whom the growers deal. So it was logical that the growers should develop a communication strategy that focused on the distributor, but the final recipient of which was the consumer. The message being broadcast had to be meaningful and credible (Valceschini, 2001; Valceschini and Polin, 1999), but this meant revising the world of references on which consumers usually relied. The growers banded together to form an association, registered a brand (Fruitnet) of which they were the collective owners, and launched a campaign carried out mainly through advertising posters, training of distributors' staff, and a logo that was intended to dispel the relative anonymity of the fruit in an industrial market.

Logo and posters to spell out the terms of the integrated production contract

In this section we analyse a communication strategy based on a labelling scheme (the Fruitnet brand) and we stress the potential consequences: debate, ambiguity, and controversy concerning the nature of the programme of work.

The strategic function of this integrated pest management – labelling scheme was to define quality other than 'standard quality'. The label Fruitnet is a sign of quality which is an attempt to act upon the consumers' perceptions by assuring them that the product corresponds to another production method and other practices. The following paragraphs are rooted in the numerous interviews with technical advisors. They are thus partly speculative, in the sense that there is no specific inquiry of consumers' perceptions and attitudes.

The logo and posters—a list of commitments offered to the consumers

The logo contains two statements:

"fruits à pépins de production intégrée"

and

"SGS et Integra agréés par le ministère fédéral des classes moyennes et de l'agriculture", which indicate that the produce is a seed fruit resulting from integrated production, and that it is certified as such by the appropriate authorities, respectively. The first statement uses the term 'integrated production', which moreover is presented in the form of a list of commitments printed on the posters. The list of commitments gives the specific cropping practices of integrated pest management, summed up by the twofold obligation to (a) reduce pesticide spraying, and (b) choose alternative pest-control methods, that is, biological and cropping methods. The second statement concerns the guarantees that are offered. It gives the certifying agencies' names and the information that they are approved by the state—specifically by the Federal Ministry of Small Enterprises, Traders and Agriculture. The logo also shows an apple and a pear against an 'F' for the first letter of the trademark Fruitnet, the stylised form of which resembles a tree. A ladybird draws the consumer's attention to the biological pest control that the growers practice. The logo summarises the growers' project by establishing links between the production methods that are used (integrated production, reduced reliance on pesticides, and biological pest control) and the types of guarantees that the growers offer (mention of the certifying bodies and state approval), but also the identity of the product, depicted by a tree bearing an apple and a pear.

The aim of this scheme is to get the consumer to stop and look, and to trigger her or his curiosity, as the logo is printed on the cellophane wrappers of the packaged fruit, on the crates in which they are placed, and also on the individual fruits (this last is a recent development). This attention-getter is a new approach, concerning what makes sense and can be considered credible by consumers—what we could call their world of relevance and credibility (Valceschini, 2001; Valceschini and Polin, 1999); or the world of references on which the consumers' judgments and the promises made to them are based (Karpik, 1996) in a particular situation, that could be summed up by what influences their buying (in the case of fruit, we are talking of purchases that take a matter of minutes). Neither firmness nor grade nor colour is at issue here. Rather, it is a proposal covering the growers' commitments to use specific production methods and how this quality is guaranteed.

The anonymity of the fruit is lessened only if the consumer stops to check things out and subscribes, to a highly variable degree and for various reasons, not only to the list of commitments but also to the arrangements that guarantee that the promises made are effectively kept (the certification mechanisms). The consumer's adhesion can be very weak and consist of a hypothesis along the lines of 'it must be better for the environment or my health'. Such adhesion places the apple or pear in its production history, that is, the specific cropping methods and the growers who practise them under the emblem of the logo. Such an adhesion process is nevertheless difficult to trigger, because it hinges on a hypothesis of relevance and credibility that is in part out of step with the consumer's actual practices, habits, and choices.

What relevance can a ladybird have in the consumers' reference system? Of course, it is a cute little bug that people see commonly on walks or in their gardens, but its behaviour and usefulness in managing an orchard are often poorly understood. To achieve this understanding, one must deal not only with the ladybird, but also with the complex system of links between this insect, the aphids on which it feeds, and the alternative to spraying with pesticides that such a symbiotic relationship represents,

and then situate this mechanism in the world of the industrial orchard—where the apples and pears displayed in the retailer's fruits and vegetables section are 'made'.

What credibility can a two-part statement that refers to a state-accredited certifying body have? Doubtless, the vague idea that the state must bear responsibility for supporting the best production practices in relation to the health and environmental issues on the public agenda today. Nevertheless, this statement fails to shed any light on the grounds for the certifying body's accreditation or the foundations of the third-party supervisory scheme.

The logo and posters trigger debate

The growers conducted a brand-familiarity survey that revealed that an extremely small percentage of buyers were familiar with their trademark: getting the consumer to stop and 'check things out' is not achieved very often. Several factors explain this. The organisation chart of the distributor's outlets is partly to blame. Each point of sale (POS) has a great deal of autonomy when it comes to its communication policy. This means that fruit and vegetable section managers at each POS must agree to allow the posters and logo to be put on view. The distributor's business is subject to very stiff competition. The store or brand must guarantee its customers a minimum degree of safety with respect to the products it distributes: much of its reputation and customer loyalty are riding on this obligation. So, showing a preference for an alternative production method entails the risk of casting doubt on other, competing, products offered.

On the other hand, if the customer's attention is caught, this is likely to open the door to questions that were not openly formulated until then: questions concerning the cropping practices (the use of pesticides in growing apples and pears), consumption practices (the possible risks incurred by eating fruit), and the very nature of the growers' proposed project (reducing reliance on pesticides or excluding pesticides from cropping altogether). The potential formulation of such questions is likely to trigger debate about production and consumption practices in which the terms are poorly defined and, even worse, for which no discussion or negotiating space is available. In these conditions, there might be a singular colloquy of the consumer contemplating a list of unmeaningful commitments in some cases strengthened by the distributor's POS in which the scheme is relayed more or less effectively. Nor is anything said about the time frames within which each party acts: the long time frame of the grower, who must deal with the meteorological, soil, and biological constraints of managing an orchard, the types of commitment made to overhaul his or her cropping practices and all the work that is required to produce lasting effects in the orchard; and the short time frame of the consumer, who makes her or his choice in a few minutes in a world awash with competing offers, and often does not even think about the implications of such an innocuous action as buying and eating an apple or pear, whether or not it is the product of specific cropping practices.

The ambiguousness of the logo

In addition to the questions that may arise in the mind of a consumer who stops in front of the poster or logo, the logo can be read as ambiguous concerning the very nature of the growers' proposals. The growers' commitment to use practices that reduce reliance on pesticides is stated both in quantitative terms (that they reduce the amount of pesticides used) and in qualitative terms (that they use selective pesticides). Such a two-track message contains ambiguity in the definitions of the pesticides: these are ranked first quantitatively according to some very simple reasoning, to wit, 'less = better'; and then qualitatively, that is, 'other = better'. Which pesticides should be put in the 'other = better' category?

The technical and economic debates on such a subject are already complex when they are confined to the production system. There is much controversy about the economic cost of the pesticides used in integrated production, which are often more expensive, but the use and effects of which are very different, especially in terms of pest-control strategies. What can be said when this question is brought to the consumer's attention via the state when the state challenges a widespread, authorised, practice in the production system? The case of cycocel (which we describe below) raised just such a challenge to conventional production practices and brought integrated production into areas where it had been unable to go because of its own programme of work and the real nature of the commitments made to the consumers.

Does the logo scheme suffice to dispel anonymity of the fruit and to reconnect production and consumption time frames? It is our view that, even though this scheme has some efficacy—which will be reflected in a slightly higher price in the markets and sales contracts—it is not enough for consumers truly to allow for production practices. The scheme is, effectively, insufficient and ambiguous. It is insufficient because it calls into play a series of additional data (for example, verification) that do not necessarily enter into the consumer's judgment at the time of purchase. It is ambiguous because it mentions elements (pesticides and biological pest control) that refer to growers' commitments but do not, for all that, ensure any verifiable quality of the product itself, as the cycocel case shows quite clearly.

The case of cycocel

What can one say when the state, acting on a precautionary principle, rewrites the terms of the contract that the growers proposed, and does so without forewarning?

The case of a growth regulator used on pear trees—cycocel—occurred in the spring of 1999. In February 1999 Dutch and British food-inspection officers seized some batches of pears from Belgium. The tests carried out on these pears revealed cycocel-residue levels that exceeded the legal limits. Cycocel is approved by the Belgian Ministry of Small Enterprises, Traders and Agriculture for use to prevent excessive growth of the tree during regrowth periods. This process is decisive for balancing the carrying capacity of the tree and producing a sufficiently large crop.

The batches of fruit were quickly withdrawn from the market. The Belgian state, in turn, 'recalled' from the domestic market all pears of Belgian origin. The official decision was made quickly: each batch of pears would have to be checked before being released to the sales circuits.

Despite announcements in the press and televised messages, the growers belonging to the association of Walloon orchard operators (GAWI) who used integrated production techniques did not escape the opprobrium that hit the entire sector because of the official inspections. It emerged that cycocel was also used in integrated production. Although the test results were contested, the harm had been done. These events damaged the reputation not only of the fruit (pears), but also of the growers—including those who were engaged in integrated production.

Once calm had been restored, a debate sprang up between the growers and technicians. Cycocel is a convenient substance for regulating pear-tree growth. Giving up the use of cycocel had to be offset by rigorous pruning techniques which took a great deal of time. The debate was finally ended by the state, which banned the use of this growth regulator.

This debate served as a starting point for thinking about the communication routes that the growers had used until then. The cycocel case revealed the hiatus between a project to reduce pesticide use and a project that would ban pesticides completely

when the project was directly linked to health and environmental issues. So, what exactly is 'integrated production'? What exactly does it cover?

After focusing the technical supervision and communication work on what the growers called the 'zero-residue policy', which consisted of a gradual ban on certain pesticides and the planned use (most efficient positioning) of allowed pesticides to avoid the presence of chemical residues in the fruit, the growers had to admit the unfeasibility of the policy. Such a course was utopian in the short term, and would inevitably lead the project into a process of denunciation if a challenge arose or controversy was later orchestrated in the public arena. It would also gradually reduce the relevance and credibility of the project in the eyes of distributors and final consumers.

The cycocel case reveals that the labelling system is poorly suited to the nature of the growers' programme of work. Labelling is thus challenged as a contract between producers and consumers. It also reveals that the producers' and consumers' time frames continue to be disconnected.

Short-circuiting the system: working with the final consumer

In this section we analyse attempts to tackle questions raised by the labelling scheme. We examine two processes through which the fruit is replaced in the subject's experience, and the growers' story.

The growers' need to find outlets for their produce explains why the labelling work was not abandoned, but was linked to specific communication strategies (as explained below) focused more on direct contact with the consumers. These communication strategies are more attempts at matching up supply and demand than strategies to create outlets per se. However, they appear to be indispensable in the creation of an arena for direct discussion about the project with consumers, who basically see the project as the distributor portrays it. This arena should make it possible to devise, little by little, a clear contract concerning not measurable results but commitments and, ultimately, to produce spin-off effects on the conventional system, which is based to a large extent on impersonal relations. Direct contact with the consumer is a way to short-circuit the conventional information system.

To come back to the strategies themselves, in the first the fruit was repositioned as an 'aesthetic' or 'hedonistic' object in the subject's story. In the second the fruit was repositioned in the story of the project as an object placed in specific contexts of time, space, and heritage. The testing grounds were, to a large extent, the open-house days that the growers held, but also a few arrangements that generally corresponded to finite actions. This was the case in particular with the distribution of an apple-vending machine, and a ladybird-farming campaign designed for primary school pupils in the French-speaking part of the country.

Informing the consumer: the fruit replaced in the subject's experience

The fruit growers of the Lower Meuse region took advantage of an 'open house' organised on one of its members' farms to set up a scheme that was intended to enable a map to be drawn of visitors' preferences (or world of relevance) for those visitors willing to participate in the survey; and to familiarise consumers with a specific nomenclature, that is, a system of linguistic landmarks that organises the translation between the gustatory characteristics of the fruit that are usually measured by instruments (penetrometer and refractometer) and the sensations one has during taste tests. Whereas the first aim is common, as it is similar to what marketing surveys strive to do, the second is more unusual.

The principle of the questionnaire was as follows: the firmness, sugar content, and crispness of the fruit—characteristics that are usually measured by instruments such as penetrometers or refractometers in the production–commercialisation chain from the grower to the distributor—were defined by the subject's actual tasting experience, that is, what the consumers felt when they bit into and swallowed the fruit. Thus, the sugar content and crispness, which are generally expressed as indices, were referred to fixed qualitative scales by means of specific nomenclatures ranging from 'sweet' to 'tart', and from 'crisp' to 'mealy', respectively. In this way, the hardness ratio, which is usually given as an index determined by a penetrometer, was compared with the sound and, more generally speaking, the consumer's general experience when he or she bit into the apple. A specific nomenclature was then overlaid on this subjective experience to enable the subject to clarify and express the actual taste-test experience by means of precise words such as 'crisp' and 'sweet'. This procedure could also be used to compare the sensations felt in trying five different varieties of apple. Each visitor participating in the 'experiment' took as much time as he or she wished to make the assessment. Visitors were also free to put questions to one of the group's technical experts, who was present throughout the open-house, to dispel any doubts that they might have about the meaning of a word or a feeling, in a word, about their final judgment or judgment-in-the-making. Thus both the cognitive and sensory-affective processes and references (that is, the system of references and taste experience) of the consumers were reconstructed in the course of the experiment.

The fruit, which is usually left to the subject's free judgment (of taste, colour, and texture), became an object for taste-testing formatted by a specific nomenclature that enabled the visitors to name what they felt and to compare their experiences in order to evaluate the quality of the fruit. In this way, the consumer's world of relevance, that is to say, what makes sense to the consumer, was changed permanently during the course of the tasting experience. That, in any event, was the aim of the scheme. Without being rewritten into its story, the fruit was replaced in the subject's story through an experience that might lead to a change in the consumer's future buying behaviour. The fruit, for its part, was named (variety), compared (with other varieties), and characterised (texture, taste, and appearance) according to a precise nomenclature and made part of an experience that could eventually turn it into an 'aesthetic' or 'hedonistic' object (an object of beauty or pleasure).

Putting consumption into the picture: the fruit replaced in the grower's story

GAWI came up with another idea last autumn, during the back-to-school period. This was to distribute ladybird-farming kits to elementary school pupils on a wide scale. Hence 2000 elementary school classes received kits in a campaign financed by the regional environment ministry. The kits contained everything necessary to farm the coleopteran and its aphid prey. The kit was accompanied by an explanatory folder on integrated production.

The two-spotted ladybird (*Adalia bipunctata*) is a common coleopteran in Belgium. This coleopteran feeds on larval and adult aphids. Although its efficacy can be criticised from a purely technical standpoint, notably when the aphid population is too large, the insect was chosen to anchor this programme on integrated pest management precisely because of two particularities: it enjoys enormous appeal ('cuteness capital') among young children; and it is the official emblem of integrated production, and as such is depicted in the Fruitnet logo.

The aim of the ladybird-farming programme was to give children a chance to see the balance that develops little by little between the ladybird and aphid populations (aphids being the ladybird's favourite prey). Putting this equilibrium in perspective,

armed with the knowledge that the aphid causes damage to the surrounding flora, will provide the foundations for building a scaffolding of links enabling the children to climb up to more general environmental or health issues. The scheme relies on the equivalence between two competing ways of controlling aphid populations—pesticides and ladybirds—that is created in the course of the insect-farming experiment.

Although neither control method rules out the other (this is directly related to the nature of the commitments made, as integrated production does not exclude pesticide use but, rather, proposes less reliance on pesticides), the steady state that is achieved little by little between the predator (ladybird) and its prey (the aphid) is seen as a form of equilibrium—a form of symbiosis that enables one to avoid using pesticides in a specific situation. The children can thus measure the comparative advantages of using biological pest-control methods in a real case. The process that is triggered in the children who see their world of relevancy changed in this way should thus serve as a springboard for a second process of which the children are in charge, as follows. In telling their parents about the experiment in which they are taking part, but above all in validating the ongoing experiment and linking it to the project in which farmers who practice integrated pest management are involved, they are expected to foster dialogue with their parents.

In consequence, the concept of integrated production will no longer be confined to a label, but will be part of a real-life experience that a child can recount to her or his parents. It becomes the subject's own experience: in this case, that of schoolchildren and their parents, to whom they recount the progress and positive outcome of the experiment. The project is thus placed in the public arena for debating health and environmental issues through the subject's own story. The fruit is no longer solely an object of beauty or pleasure ('aesthetic or hedonistic'), but an object that circulates in the public domain and is filled with a form of commitment that links it to the growers' project and, by derivation, with the children's project.

Here experience serves another function—that of inserting the fruit in the growers' story but also into a temporal and spatial framework that is rebuilt around a new form of commitment to integrated farming. This last is no longer just a logo, brand, label, or impersonal abstract statement, but part of contractual obligation between growers and consumers. Through this process the farmer is identified as a stakeholder in processes designed to solve health and environmental problems, and also as the central actor in the design and implementation of more suitable cropping practices for this world of new demands. The children (and their parents) are asked to stop and look at their consumption habits (and those of their parents), but also asked to support more suitable patterns actively—through teaching others and making specific investments in this direction. In this way, the fruit becomes part of a heritage of which integrated pest management is the main mediator and which each player must conserve in his or her own way.

The heretofore anonymous (in the child's world of relevance) fruit and label become mediators between production techniques (integrated production) and the environmental and health issues discussed in a larger arena. The fruit and project are reincorporated into (1) a collective that redefines and redistributes growers' and consumers' rights and responsibilities and in which civic mindedness is thus redefined (Boltanski and Thévenot, 1991; Thévenot, 2000); and (2) a situated, localised story: that of the growers practising integrated production, that of the ladybirds–aphids–pesticides, but also that of the children (and their parents) who have gained solid references to fuel thought about the rights and duties that are linked to the act of eating an apple or pear. The act of consumption becomes an act situated within a 'common house' (Boltanski and Thévenot, 1991; Thévenot, 2000) in which each resident must think about the implications of her or his choices.

What about informing the consumer and putting consumption into the picture

After focusing on evidence-based and measurement-based communication management, GAWI has gradually shifted towards work focused on the subject's experience and placing the consumer in the project story. This work is carried out on three levels.

(a) On the 'cognitive' level: How does one evaluate an apple? What are the advantages of reducing the use of pesticides and encouraging biological pest control? What connections can be made between integrated production and environmental pollution or health issues? How do you measure sugar content and firmness? How do you set the best harvest dates? How do you get a bright red apple?

(b) On the 'affective' level: visualising the orchard by walking in it; visualising the trip that the fruit makes from the tree to the growers' pallet boxes and cold-storage rooms; smelling and tasting an apple straight from the harvest crate; and so on. Here, it is essentially the subject's story and experience that the growers want to affect or direct. They try to create a moment in the subject's biography that can be used to trigger thought, with the hope that this thought will leave traces that are likely to change what makes sense to, and is seen as genuine by, the subject cum consumer and could ultimately modify her or his future purchasing behaviour. The fruit takes on an 'aesthetic' or 'hedonistic' dimension in a relationship with a subject who takes time to taste and compare it and participate in an approach in which she or he tries to understand better both the object and the network that defines it, that is, the orchard, grower, and observation techniques.

(c) On the social level: here it is more a matter of placing the consumer in the growers' story and project. Here the fruit serves as a marker, as the final product of a story that interlocks with space and time. The subject is allowed to reconstruct the story of the project and in so doing to situate it, localise it, and turn it into a heritage.

Conclusions

The market extension that is characteristic of the industrial systems of today is nothing new. However, it has recently been seen to be accompanied necessarily by the construction of an information-circulation system that makes it possible. However, the information that circulates is truly information in that it modifies the entities that make up the production and commercialisation chains. In this paper we have stressed in particular two effects of this development. First, the information-circulation chain must be subtended by a process of abstraction in which quality is defined by technical and scientific measurements, classification grids, and signs of quality that are supposed to translate this quality relevantly and credibly. However, this process changes all of the entities that make up the chain, and sometimes forces the entry of new entities, such as pesticides, that subsequently prove to be critical factors of this same quality. Second, this same extension of markets and information channels disconnects the time frames of the various components: consumption is immediate; the market functions weekly; sales strategies stretch over a few months; but the production systems, which remain tied to natural cycles, are much longer.

As a result, the crises of quality that break out—and which quickly lead to poor sales or radical policy decisions (said to be precautionary)—subject the growers to very great pressure that they sometimes try to ward off by erecting systems of quality, guarantee, and certification. Nevertheless, these forms of labelling do not escape these same processes of abstraction and disconnection of the respective time frames of consumption, selling, and production. Crises can then occur, revealing gaps between the promises of certified quality and the reality of the produce or the effects of the produce on health and the environment.

When producers and consumers can no longer count on the information-flow system alone, they have the option of going back to forms of producer – consumer relations which, without cancelling this extension of the markets and information channels, nevertheless try to short-circuit them. The case that we have studied shows how the producers went about this by trying to turn consumption into a broader and more refined subjective experience while drawing the connections with 'industrial' criteria of quality. This return to an informed subjectivity of technical criteria may be seen as a learning experience in which the consumers enter the technical system and the producers try to adjust to this new recognition of their activity. The producers also tried to trigger a process that would enable consumers to understand the length and complexity of the production patterns.

Through these experiences quality was also redefined on another level—that of the growers' commitments to improving quality. These commitments obviously occur in all quality systems, but are mediated by technical measures and forms of verification and traceability. The experiences that we have observed do not deny these intermediaries, but are attempts to connect immediate experiences and historical trajectories in a special form of communication that is less centred on the provision of proof than on mutual commitments.

Short-circuiting the system thus appears to be an attempt to reduce the double break caused by the anonymity of the fruit and the different time frames of production and consumption. The question of the compatibility of such arrangements with the long orchard-to-table chain remains unanswered. Many of the stakes involved, as well as the success of such a programme, are riding on precisely this answer.

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