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Quality in economics: a cognitive perspective¹

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Introduction

The importance of food quality issues in the contemporary global context is well established. Since the early 1990s we have seen developments in nutrition, life sciences and biotech programmes; the setting up of food quality standards in Europe as well as in other OECD countries; the heightened focus of the media on food issues and a series of food safety crises. On the market side these trends have included a reconsideration of business strategy on the part of firms and their implementation of quality standards, which, as a result, are profoundly renewing and extending food differentiation. Moreover, two complementary tendencies are emerging from the 1990s, which can be viewed as *disorganising* food markets and as a manifestation of postmodern reflexivity:

- an increase in public concern regarding health and environment, including animal welfare and
- the questioning of the legitimacy of the ‘institutions’ which provide knowledge about food: mothers as the experts, public agencies and even ‘science’, which together functioned in a way that guaranteed the productivist model of industrialisation and the safety of food during the so-called modern period.

The approach developed in this chapter is for food quality to be viewed in terms of emergent cognitive paradigms sustained within food product networks that encompass a wide range of social actors, from farm to fork, with a wide variety of intermediaries, professional and governmental. There has been a new and historical problematising of the quality of food, partly in relation to food crises, partly in relation to the globalisation of food networks. But to arrive at this theoretical approach, a critique of orthodox economic accounts of quality is advanced, and in particular their failure to explore deeply enough issues of consumption. Quality issues, in various guises, have been central to economic approaches and their understanding of markets and competition. Mainstream approaches offer a normative view to consumption to cope with the differentiation of goods. The general underlying critique is that they find it difficult to accommodate the increasing complexity of quality, conflicting

understandings and contradictory paradigms of quality, that have become a historical feature of contemporary food markets. They tend to reduce these processes of ever-increasing heterogeneity to restrictive accounts where ‘information gaps’ can be mitigated. Although the heterogeneity of goods is controlled by standardisation, both in local settings, through routines, and in global markets, through the institution of quality standards, the quality issue is not about to end.

Quality refers to the social performance of a product or a service. The view of qualities as cognitive paradigms is developed in counter-position to the normative orthodoxy, by examining its deficiency in order to present alternative solutions. Thus the structure of this chapter is divided into two broad sections, following a brief description of the historical moment of the ‘quality turn’ in food. In the first, economic theories of quality, and of the central dilemmas addressed by these, especially in relation to food quality are explored. In succession, we critique normative views of measurement and standardisation of quality assumed necessary for (food) markets to function; views of how consumer and producer technologies and labour are substitutable in co-production of food; the role of certification, labelling and credence and brand reputation, supported by many market intermediaries as a response to ‘market failure’. In the second, I develop a different approach, arguing that now a broader perspective is necessary to meet the challenge of heterogeneity and change, in order to understand how shared cognitive integrations, embracing producers, intermediaries and consumers, is essential to the overall constitution of food quality. I call these *cognitive paradigms*, and identify a central tension between two fundamental tendencies: the tendency towards experimental decomposition and combination; and the tendency towards holistic quality based on identity. I thus see the social process of qualification as a dynamic one, in which quality conflicts and quality hybridisation are central features of global food markets, provisioning and consumption.

The ‘quality turn’

The differentiation of food by quality concerns the whole system of food production and provision. The diversification of food services (prepared food, lunch services, various information services, etc.) and of food items in the marketplace rests on an increasingly complex circulation and mixing of ingredients. The universe of quality features ‘immaterials’ (or signs). Lash and Urry (1994) distinguish two kinds of signs according to whether they have a primarily *cognitive-informational* content, which they refer to as ‘post-industrial goods’, or an *aesthetic* content, which they refer to as ‘post-modern goods’. I argue that the diffusion of aesthetic goods lies in the realm of politics and that aestheticisation is not limited to a particular domain of consumption practices but rather corresponds to the individualisation of agencies. In the context of globalisation, aesthetics and more generally ‘immaterials’ (Allaire and Wolf 2001) allow for the mobility of goods and for

polymorphism. Markets tend to be global, and thus food is becoming more public and diverse, both in terms of norms and opinion. In the last decade, the differentiation of quality as a driver of innovation has been due to several factors, which include the aestheticising and individualising of food consumption patterns, on one hand, and citizen and public concerns about the environment and health, on the other.

Professional, industrial and public strategies to develop the production of labels indicate a much more polymorphic world than does the representation of quality in conventional approaches to agro-food studies. Components of this 'quality turn' comprise the immaterialising of food and the institutionalising of quality (qualities), as suggested by Goodman (2002: 272): 'organic production, other alternative agrofood networks, quality assurance schemes and territorial strategies to valorise local food product'. However according to Goodman, consumption has been under-theorised in the research devoted to the political economy of agrofood, and this has led him to call for an integrative approach to production and consumption. To integrate the consumption point of view in innovation studies regarding food chains is still a challenge for both sociologists and economists.

One may observe that food markets and industry have historically constituted a barrier between farmers and final consumers (the eaters). The story is well known: industrial norms, homogenised mass food, farmers became suppliers of raw materials, consumers concentrated in towns, displacing forms of supply, and so on. But this story is incomplete if we do not take into account important transformations in consumption patterns with the development of services. In the early days of industrialisation, food products were still ingredients for family cuisine. The development of food processing services and the trend towards eating out (Warde and Martens 2000) correspond to structural changes, which have introduced the basis for the multiplication and the market differentiation of food goods, and hence new issues regarding quality for the globalisation of food networks. In the last decade, rural sociologists and geographers, while generally not abandoning the macro perspective of the political economy of the agro-food system, have shifted to an analysis in terms of 'actor networks' (Arce and Marsden 1993; Marsden and Arce 1995; Whatmore and Thorne 1997; Murdoch and Miele 1999; Murdoch et al. 2000). According to Lockie and Kitto (2000: 15; see also Goodman 1999), this literature has neglected the analysis of the hybrid nature of the networks 'prior to their destabilisation by bio-activists or alternative food networks' and failed to 'problematise the relationships between "consumers" and "producers" in the networks through which they are constituted'.² Nevertheless, all these works have introduced quality as a network-based property, rather than an individual preference. The following sections will show that this perspective is still challenging for economists.

One way to define the 'quality turn' is as a change in the demand regime: other factors than prices are taken into account by consumers situated in a global market developing a differentiation of services. The notion of

‘turning-point’ implies structural evolution. Institutional supports are necessary if we invoke factors other than price to circulate knowledge about product qualities. These institutional supports are referred to as the ‘economy of quality’, following Karpik (1989).³ In terms of societal change, ‘economy of quality’ can be associated with ‘knowledge economy’ or ‘risk society’, although each notion has its own story. What is at stake in the ‘turn’ in agro-food studies is the attribution of analytical salience to food knowledge and opinion. In order to embrace the whole issue, ‘economy of quality’ applies both to specific quality products, in the restricted sense of identity-based products, and to ‘functional food’, which integrates food with dedicated health services (Kalaitzandonakes 2000). Both genetically modified organisms (GMOs) and organic foods imply institutional innovation, which during the entire decade of the 1990s was one of the major concerns of American and European food authorities and policies. A new regime of innovation has developed through the extension of *alternative* foods, even if these types of niche market have grown, and even if those alternatives have been recognised by public policies and play a role in popular representations of food which extend far beyond their markets. Quality differentiation, however, concerns also the large industrial and distribution food systems. Private brands have been investing in ‘green’ and ‘security’ attributes, especially after the recent food scare crises (Allaire 2002). These different developments introduce and rest on a change in the ‘institutional forms of competition’: to engage private behaviours and strategies and to penetrate into the world of consumers, quality differentiation processes imply changes in market institutions.

In previous papers (e.g. Allaire 1995), I have related institutional change, or change in the ‘mode of regulation’, of the sector of agriculture to crises in ‘conventions of quality’ developed in the markets under the Common Agricultural Policy (CAP). In that approach, a ‘quality crisis’ arises from a gap between current market generic quality norms and users’ expectations which call into question prevailing conventions of quality. On the one hand, a local quality crisis appears when a local system of production does not adapt to the market; that can occur in various settings, both in the industrial poultry sector in Britain (as today) and in an area of production labelled for its origin. It can be attributed to problems of collective competence. On the other hand, at a macro level, a quality crisis can be seen as an institutional crisis, i.e. as challenging the whole system of market institutions that participate in and regulate the design of quality. Thus, the CAP (prior to the reform of 1999) normalised a generic market quality by fixing intervention prices and defining a minimum level of quality below which products had to be removed from the market. These minimum norms, by polarising the market, limited market differentiation (to varying extents in different product markets). Under this type of regulation, paradoxically, the more saturated the market, the less able it was to satisfy new demands for quality. That gave rise to an argument for more market-oriented agricultural policies, with quality

regulation becoming an important part of these policies. But my analysis of the socio-economic developments leading to an institutional quality crisis and to the agricultural policy changes initiated in the 1990s is now proving insufficient to address new quality conventions emerging with the globalisation of food. This chapter's interest is with exploring how economists' theories take into account the process of the creation of quality in the period of the current quality crisis.

Limits of normative approaches to food quality

Standards and quality

The fact of the heterogeneity of goods is obvious – particularly in agriculture and food, due to the idiosyncrasy of the conditions of production and consumption. Standards allow for comparability of goods in the marketplace and for technical compatibility, both in production and consumption. There are measurement standards (grades) and definition standards (norms) which specify a type of good. To be a tradable good, a product or a service comes with a body of information referred to by economists as standards. As Kindleberger (1983) says, standards extend to private, collective and public goods according to whether they relate to contractual specifications, professional community repertoires or public norms. Less formal information is generally referred to by the notion of 'convention'. Conventions of quality have historical consistency and, as regularities, they provide frameworks for coordination.⁴ Quality is not natural; rather it is a mode of ordering the natural and the social.

To become generally established, a quality convention involves both types of standard. How information is construed is central to the design of quality: it is institutional knowledge, analogous to a 'constitutive rule' in Searle's sense.⁵ The emergence of quality standards and designations signifies that both producers and users potentially have some control over a relevant characteristic and are able to understand it in common terms, so quality is constituted within a social and institutional space. In a context that is becoming more global, in order for quality to be effective it must be understood as a 'complete' set of rules.⁶ Product 'characteristics' are physical features, intrinsic (composition) or extrinsic (place and context of production or consumption). Quality involves knowledge (or rules) for determining a characteristic that *counts as* distinguishing a good within a family of goods or establishes a particular relationship between different goods. Quality characteristics and standards may relate many aspects, such as the process of production, or the product or the service it delivers to the consumer in a given context. They designate public domains of norms and conventions. The so-called 'quality turn' extends the reach of standardisation to 'alternative foods' as they are integrated within the referencing system. However, this introduces new cognitive ambiguities and complexities into the notion of quality. Scientific controversies and the recent food crises reveal the instability of knowledge of quality and of the institutions regulating it.

From a standard economics point of view, the gains from comparability, both private and social, are the driving force for standardisation (Katz and Shapiro 1985), supported by positive network externalities. The setting up of standards and the referencing of activities and products form the baseline process for the globalisation of technical systems and market extension. They are also a normative basis for economic theory. In the basic framework of the theory of market competition, goods are homogeneous, meaning that they are perfectly known as distinct from other goods. Qualifying information is considered as an objective and constitutive part of goods, and, as shown by Stigler (1961), the costs of searching for and communicating that information are part of the equilibrium price. 'Quality' relates to the creation and evolution of the nomenclature of goods. Mainstream theories limit themselves to the identification and correction of failures in the maintenance of a given nomenclature resulting from asymmetries in the distribution of information, and in failure of its public character. In this account, the institutional and cognitive process relating to the creation of product characteristics is exogenous in relation to the 'natural', or objective, properties of goods. I see this account as restrictive when considering how goods multiply when new information concerning their properties is revealed, thus introducing controversial issues of pertinence and coherence of established informational norms. Competition is supposed to result in efficient allocation, and in a predictable world, relies on perfectly decomposable pieces of information. The identities of goods must be generally established for the development of competitive adjustments, as can be seen from the devastating effects that follow the emergence of critical suspicions about the identity of goods (e.g. 'mad cow', dioxin and other food scares). In the following sub-sections I examine two aspects of the classic economic approach to quality, the first referring to the technology of consumption and the second to quality labels (or signs) and information intermediaries. The conclusion of that discussion leads to a more global analysis of the process of the creation of quality.

Normative consumption technology approaches

Variations in quality characteristics are brought about by the variability of technologies, resources, places of production and the variability of producers' skills. Differences within supplied products and services also result from the market process itself. As initially noticed by Sraffa, the producer desiring to increase her sales can attempt to break down consumer indifference regarding the producer's identity (to which, theoretically, the market is blind) and try to move up the product's individual supply curve. That strategy generates variety and the market rapidly becomes a network of differentiated and more-or-less isolated individual markets. Classically, according to Chamberlin (1933), these markets of differentiated products are monopoly-like, meaning that producers have some control over their pricing strategy, but a control limited by lateral substitution within qualities. Thus producer rationale functions to exploit variations in the characteristics of similar products, and to develop

the art of marketing. But Chamberlin, who considered product variations qualitative 'in their essence', viewed the consequence of this process of differentiation as the quasi-impossibility of aggregating individual supply curves into a unique supply curve. The theory of reputation has been developed to incorporate the residual qualitative differences in a market perspective. If the differences are relevant for the consumer, they impart 'true quality' to the product.⁷

Economists have introduced the notion of consumption technology (or the consumer function of production) to make a distinction between goods in the market and the consumer use of goods in a process designed to obtain expected effects or affects that are the final goals of consumption. The consumption function proposed by Lancaster (1966) links goods and their objective characteristics with the services they display for the consumption process, which are the true arguments for the consumer utility function. Relevant characteristics are integrated capabilities to perform given services. In contrast to Chamberlin's view of quality, Lancaster's 'characteristics' are objectively quantifiable as well as objectively identifiable, similar to physical features. The characteristics which count in the first instance (e.g. the consumer prefers and pays for a car's size and then chooses the colour) are assumed measurable. No measurable characteristic corresponds to subjective attributes, which are not considered as market structures.

Goods for the consumer are multifunctional and can deliver a bundle of characteristics. In this way, food may combine nutrients and very possibly undesirable ingredients. A service may be assured alternatively by several types of good or service possessing relevant capabilities. A dinner at home may involve variable domestic work or be substituted for by a meal at a restaurant. Some activities may shift from production to consumption, or the reverse. According to Becker (1965), services that intervene in final consumption are produced using purchased goods and personal time, combined in the production function of the household. This theory provides insights into two factors of developing consumption activities: the content in the services of supplied goods (consumption opportunities) and the value of time for individuals (time resources). Stigler and Becker (1977) have added consumer skills and specific capital to this function. The consumer in the consumption process is thus represented as playing a more active role by including the accumulation of consumption capital (routinised consumption patterns) and the building of competences (learning processes). Allowing for trade-offs of goods for time and time for consumption capital, Beckerian models explain observed consumer behaviours which do not adapt directly to price variation, but are *rational* considering the consumption function parameters. The market integrates this social variation of consumption patterns, which is constrained by the distribution of incomes and time budget. However, the foundations of neo-classical approaches to consumption technology are challenged if we aim to consider reflexive dynamics (changes in preference and innovation by demand).

To safeguard the normative theory of competition, the Lancasterian matrix needs to be comprehensive or integrative, allowing for homogeneous understanding of the goods/characteristics, nomenclature and for homogeneous perception by the consumers of each product's distribution of qualities.⁸ A characteristic has to be presented in the same way and according to common references to result in identifiable information; in other words to make sense in a context of multiple sources of propositions. To satisfy this condition, innovation is limited to the permutation of characteristics and the displacing of capabilities between the spheres of production and consumption. Technical change remains compatible with the model as long as the structure of preferences for characteristics stays stable. And the model rests on an assumption of perfect substitutability of the capabilities diversely integrated in various products and services. In Lancaster's terms (1979: 20–1), 'goods are simply a transfer mechanism whereby characteristics are bundled up into packages at the manufacturing point . . . [and] opened up to yield their characteristics again at the point of consumption'. Good design counts for technical and economic reasons, but one can say that the technology is perfectly substitutable between spheres: the producer adapts on her side, through analysis of the market characteristics, but is indifferent to the user and the consumer/user adapts on her side, being indifferent to the particular product or producer. Although Lancaster or Stigler and Becker (with the idea of consumption capital accumulation) and followers found many reasons for rational consumers to escape such a rigid model, the model has continued to be considered as the consumption rationality norm. No economist will pretend that such a model can really be comprehensive if we admit some product-particular identity ('true quality') that is behind reputation models, but the mainstream continues to adhere to the normative theory of consumption. In such a view, deviant behaviours (based on subjectivity) are classed as 'inefficient'. Classic explanations invoke a lack of consumers' managerial skills or consumption capital or experience, with all factors reduced to a lack of information. Assuming that relevant information is provided to consumers, the rational consumption model is the normative horizon.

The technology of consumption approach is capable of explaining transformations in systems of food production, distribution and consumption which can be analysed as technical substitutions, assuming that on both sides – goods and consumption patterns – innovation is decomposable into its corresponding capacities, implying generally complementary goods or skills on the part of the consumer. For example, assuming a stable preference for the reduction of the domestic working time of individuals, the theory suggests the development of a line of innovation that allows for that substitution. The prediction fits well with the 'Fordist' period. But such a development was sustained by other socio-economic changes which allowed for the separation of activities in time and, notably, some private control of individuals over the use of their 'own time'.⁹ Furthermore that development implied the technological identification of the capacity of products and services to make

economies in real preparation time. The objective technology approach had a certain relevance in a period when, under public initiative, basic nutritional and food hygiene knowledge was being diffused, when accounting had become a generalised practice in households, and when consumption awareness and skills were being strengthened by information provided by advertising, social workers, magazines, consumer organisations and other institutions. Information that was undoubtedly partly contradictory, was embedded in a homogeneous discourse on the theme of a 'sane and happy' modern way of life (Barthes 1972).

This approach however, would appear unsuitable for the contemporary and more controversial world. Today, the complexity of the consumption process is more cognitive than technical. Many developments make this account of perfect substitutability and switching difficult to sustain. Firstly, products integrate more services and the diversity of goods multiplies rapidly. While the process of domestic consumption (including meals) often requires less working time, the process of investment in consumption capital is more subtle. The evolution of food behaviours in this regard appears as a structural change in consumption technologies. Secondly, food services are largely outsourced in various forms, while purchased food products and services are heavily encapsulated with symbolic burdens and public and ethical responsibilities. Thirdly, activities devoted to food and 'foodism' (the culture of food) are blends that make it difficult to split working from leisure time. And, fourthly, outsourced capacities include information services and all public or collective bodies contributing to the formation of consumption capital. Immaterial food services include, for example, membership in a wine club or a 'community-supported agriculture' programme, as well as consulting a paediatrician about what to feed a baby. All these changes in 'consumption technologies' imply changes in belief in quality attributes.

Certification and credence intermediaries

In mainstream economics, it is considered a normative result that asymmetry of information about quality leads to sub-optimal choices by consumers and to market domination by the lowest quality as shown by Akerlof (1970). Following Akerlof's line of argument, because of opportunism producers do not reveal the quality of their offers; price information cannot do the job; and, consequently, a market does not exist for quality. As a result, producers acting to escape pure competition become motivated to escape a market where quality is not valued by differentiating themselves and making quality significant. Certified labels and reputation investments are complementary mechanisms assumed to restore market coordination. Through reputation mechanisms, by which consumers' expectations are assumed to form the firm's reputation, the market is supposed to be able to introduce a coherent signalling system. A firm invests in its own reputation if it can rely on a process of consumer learning about its products' 'true quality'. Premium price represents returns on that reputation investment and incites the producer to continue her quality

approach. The existence of premium prices – which seems to give rise to a reduction in welfare compared to a situation of perfect information – should not be regarded as a market failure, but rather as a cost due to imperfect information, which is as real as production costs (Shapiro 1983). The essential hypothesis of the model is thus the existence of an effective process of consumer learning, offering private incentives to invest in quality. The critical issue is thus the mechanisms of consumer learning.

Reputation has important collective aspects which condition consumer learning and drive strategies to maintain collective reputation in a changing environment. A technological change which decreases the production costs of a generic product or extends its basic capacities can weaken ‘high quality’ positions if producers of the ‘higher’ segment do not benefit from the same change, making it more costly and risky to ‘invest in reputation’ by keeping to traditional quality norms. On the other hand, technical change that, *ex post*, is regarded as affecting the quality characteristics of a product may reveal superior characteristics of the original product and indirectly provide an opportunity for producers to maintain their previous method of valuing those characteristics, as in the case of ‘artisan’ or ‘traditional’ or ‘hand-made’ products, which have in this way become investment arenas. Another factor in the disturbance of the quality order is the change in the identities of the leading actors in the design of quality.¹⁰ Many food stories that combine such different disturbances of quality positions could be told. Reputation and quality orderings are challenged to design quality by structural changes and by competition between collective actors.

As pointed out by Nelson (1970), goods can be distinguished on the basis of how they convey information to the consumer: ‘search goods’ which exhibit their characteristics to the consumer in search (e.g. consumer chooses yellow or red apple prior to the purchase) are opposed to ‘experience goods’ the properties of which are revealed by the act of consumption, after the purchase (e.g. when eating, the consumer assesses the sweetness of the apple). These distinctions do not lead to fixed types of good: *search* and *experience* are complementary processes from a technology of consumption viewpoint, allowing the consumer to learn (e.g. the consumer can associate the yellow apple with sweetness according to her own taste). Search needs experience and experience changes search orientation. In many cases, individual experience is insufficient to assess the product or service characteristics. Consumers benefit from knowledge acquired by others, experts and connoisseurs, and are confronted with private or public signalling initiatives, including the mandatory label. Finally, if the product information were complete and comprehensively formalised, search goods would correspond to standardised goods, allowing for large expansion in transparent markets. Indeed intermediaries compete to label product properties and the informative effectiveness of labels is conditioned but threatened by the plurality of signs.

A third category of knowledge attributes attached to goods is generally distinguished in the recent food economics literature as ‘credence attributes’,

denoting such features which are important to the consumer, but which the consumer is unable to discover by the consumption experience. They refer to contextual product properties related to certain public goods and values, such as environmental or social justice, or to cultural values that may be community-specific. The 'quality turn' may be related to an opinion, developing in the specialist literature, according to which food markets feature these immaterial (or external) attributes. While 'experience goods' refers to individual kinds of experiences that can be substituted by information, 'credence goods' refers to a social (or distributed) experience. Credence involves reliance on intermediaries to assess those characteristics. Food safety and nutritional properties are examples of such attributes that combine reported personal experience and credence in various sources of knowledge. Credence attributes include immaterial virtues of specific characteristics, such as denomination of origin, whether GMO-free, or the extent to which the production process is environmentally friendly or treats animals humanely. They extend to cultural and political concerns that have developed out of public controversies related not only to food quality, but to more global issues such as the multi-functionality of agriculture and trade and development debates. Corresponding characteristics of the production and distribution processes cannot be traced in the final product and will not be revealed by experience of the product. Third-party action is needed to make the quality judgement, in the way that experts in the art market and connoisseurs in deluxe food markets judge quality.

A distinction has to be made between knowable characteristics, on the one hand, about which individuals may lack information due to the cost of investigation, and, on the other hand, global quality constitution, which is not assessed according to universal norms. While the certification of the characteristics not assessable by the client is assumed to mitigate the lack of information, the issue of credence appears if we consider that these certifiable, and thus measurable, characteristics do not exhaust the entire significance of the quality. Credence is manifested when experience (which verifies searched characteristics) is shared.

While the cost of experience is lessened by reference-sharing and public information, socialisation of experience engages 'experts', and credence issues arise due to the evident fact that expert knowledge is always incomplete and thus liable to challenge. It was with this meaning that the term 'credence' was initially introduced in economics by Darby and Karni (1973) to analyse markets in which sellers are also experts who determine consumers' needs, such as 'medical, automotive, and other repair services'. In general, professionals are in the situation of experts, and professional services involve trust. What, for example, specifically determines the quality of products 'made on farm' and directly sold by a farmer to a consumer is the credence in the expert-specific skills of the farmer who manages the whole chain down to the consumer. More generally, food services involve professionals and can be characterised by the notion of 'credence goods', from

the master chef's cuisine to the school-lunch programme designed by a nutritional expert.

In 'credence goods' we are confronted with several conceptions of quality, although the current mainstream literature generally addresses isolated food credence attributes and assimilates them to levels of quality, retaining a Lancasterian technology perspective (credence attributes are in this account considered to be objective characteristics combined with the others in constant terms). It is assumed that regulation is effective, transmitting a perfect definition of the quality similarly to all consumers, even if the given quality may be valued only by some. More importantly, while the definition of the space of quality is considered to be an exogenous problem, that space is assumed to be coherent and information unambiguous. Nevertheless the notion of credence introduces a particular type of knowledge by linking identifiable characteristics (signs) with a not fully assessable quality and confronts the normative view with fuzzy goods established by loose linkages between signs and quality.

Credence, or trust, refers to the fact that consumers, unable to judge the intrinsic characteristics of the product or service, make their choice on the basis of an act of faith in the producer or service provider, the characteristics of which appear as significant cues for the consumer decision. Such cues include personal elements, if the exchange is made in a community context, or objective references, such as the place of production, membership in a profession, or certification of the production process or producer capabilities. In large markets, credence relies on actors who impart a particular identity to the product, i.e. immaterial attributes. These may be the name of the distributor, the trademark of the producer, the name of a certification body or some public guarantor, but they may also be various intermediaries speaking for the product (word-of-mouth networks, specialist magazines, etc.). Such intermediaries, if they are effective, add value to products by qualifying them in the sense that they provide elements of judgement. The issue of credence is one of the credibility of the source, which of course introduces the possibility of credibility gaps. Uncertain costs spring from the incompleteness of the quality specifications, while credence intermediaries are assumed to supply producers, consumers and various stakeholders with relevant knowledge. Thus, markets for credence goods are made possible by supplying consumers with a substitute for the information and trust they lack (Tirole 1988). While third-party, or public, regulations are generally viewed as perfectly mitigating such information failure, they themselves can fail. Since certification procedures, and in general quality signs, are imperfect substitutes for quality knowledge, they are necessarily completed by other sources of opinion in order to have credence effects. A sign, as a physical informational object, comes without direct significance. Its sense is inscribed in contextual quality conventions, and comes from the quality representations of those who give significance to it. All signs potentially display multiple significations. A sign is able to clear up the quality market if the

consumer is able to pass judgement on and get meaning from it, generally by combination of information. This raises the more general issue of the potential increase in instability of credence attributes with increasing complexity and globalisation of quality.

Anania and Nisticò (2002) present a model which aims to explain the persistence of credence failures by comparing three institutional scenarios: no regulation; imperfect regulation; and perfect regulation. They conclude that producers, both individually and collectively, can have an interest in sustaining imperfect regulation, and for that reason quality labels must be considered an imperfect substitute for credence. However, the example the authors describe, that of products under the EU regulation for marques of geographical indication (where a food product originates, or PGI) and marques for denomination of origin (specific types of product, or PDO), is insufficiently analysed. They link imperfect regulation to the fact that the quality attributes of certain new PGIs remain heterogeneous due to compromises within different groups of producers, leading to the definition of loose quality rules. While it is in fashion in economics to admit 'imperfection' in the sense of a certain amount of fraud or cheating as an economic lubricant, other explanations of the ambivalence of the rules and of the product can be offered if we take into account the plurality of signs it conveys. If the imprecision of the production rules associated with the label is the problem, and several studies show that this can indeed be the case, we are confronted with a situation *à la* Akerlof, where a specific quality market does not exist, and this is generally confirmed by the fact that the PGI sign does not receive a premium. In the case of a longstanding reputation related to origin, a PDO (say, Bordeaux wines), however, we are again confronted with a heterogeneous product and market. The name 'Bordeaux' is engaged in a design quality system (and network) which was evolving over time, along with the evolving of market structures and actors strategies. According to Barjolle and Sylvander (2002), a sign loses credibility if the product heterogeneity increases, but this depends on market structure and the play of signs. Oversimplifying the Bordeaux story, it can be said that such a loss has happened to the name as a result of the growth of a large market for *generic* Bordeaux wines. For consumers, Bordeaux has become differentiated into 'low' and 'high' levels of quality, according to whether or not the wine label refers to a particular *terroir*, and the most reputed terroirs no longer make any reference to the name Bordeaux. In this case, the regulation is 'imperfect', not in fact because rational producers have commercial interests in maintaining some fuzzy definition of the quality of the wine, but because they are competing to define the *true* quality, and we are confronted with the differentiation of signs in a same region.

Complementary recent works assessing consumer response to protected geographical identification labelling show variable combinations within quality dimensions. Loureiro and McCluskey (2000) calculated consumers' willingness to pay for the PGI label 'Galician Veal' (known by 48 per cent of

shoppers in Spain) and found it to generate a high premium only for certain meat cuts, according to a vertical classification, specifically the high quality meat cuts, while it does not at the extremes (the 'low' and the 'very high', or deluxe, parts). This suggests that the PGI label is effective only in combination with other indicators. The authors conclude that to use the PGI label for products that are not of 'high' quality (here according to the type of cut) is not an efficient marketing strategy and possibly could damage the collective reputation. Hassan and Monier-Dilhan (2002), comparing the value for the consumer of a PDO label (Camembert, a recently recognised PDO intervening in a longstanding market) with marques of processor (national brands) and marques of distributor (private brands), show that the label of origin is valorised more in combination with distributor marques than with processor marques. Finally, credence goods are not one-dimensional and signs do not combine linearly.

Another example of credence complexity and fallibility comes from 'alternative foods'. The intricate and tricky links between expertise and credence issues in the process of innovation can be seen in 'organic' agriculture and food. Organic producers consider that they are experts in what is good both for the 'health and the earth' (as expressed in their own literature). However organic producers are not the original experts, just as physicians are not the original experts behind the procedures they follow, even if they are autonomous in their diagnoses. The idea of organic production emerged as a holistic set of 'principles'. Steiner and Howard, the founders of the two main traditions, have had a number of followers, recognised as 'masters' – a form of expert – by both producers and consumers in what can be called 'organic' community networks. Within these networks credence systems have developed, including dedicated direct provision networks and confidential trademark supports (e.g. 'Demeter', since 1928).

In this context of 'domestic' and 'inspired' types of quality convention (to use the classification of Boltanski and Thévenot 1991), incipient organic farming professional networks eventually led to the normalisation and emergence of 'industrial' and 'market oriented' organic quality conventions (Sylvander 1997). As a result of several evolutionary factors in both the social and the market role of 'organic quality', the globalisation of that quality is today supported by a public system of certification and of signalling. Products exhibiting the official logo have to be certified by agreed independent certification bodies, which today is 'good practice' for public quality policies.

The extension of organic networks has introduced the need for public guarantees. The worldwide normalisation of the quality 'organic' by homogeneous public standards in the 1990s instituted that attribute in the global food market, but not without controversy. This has resulted in a structural change in the institutional definition of what can be called 'organic' quality. While the economics literature has discussed the comparison between public or private systems of certification in formal terms (free of space-time reference), we are here confronted with an historical change in the institutional

form of quality. This change has not led to a complete quality convention substitution. In other words, the standard and the logo have not fulfilled their promises. Thus one can observe an uneasy combination of the two institutional forms: community-based and professional networks supplement public standards to shore up fallible credence (Sylvander 2003).

While the word 'organic' is still something of a mystery in terms of credence, the term 'organic standard' is nothing more than an objective attribute allowing for the introduction of organic products into more varied patterns of consumption. I stress here two impacts of that development. First, while 'organic' quality is defined by standards, as a global attribute it has been introduced as legitimate knowledge in the public sphere of law and research. Public interest being high, information and issues around organic products have become popularised, with legal and scientific 'facts' mixed in with health and foodist imagery in numerous magazine and media stories (Allaire and Wolf 2001). Second, somehow 'organic' quality is in competition in the public's conception with what is referred to as 'healthful' and hygienic food, a quality inscribed in law as a consumer right. While organic standards may not claim to be more healthful, they do put a negative value on the use of chemicals, irradiation and GMOs. Hence they play a role in the deconstruction of a previously unquestioned public credence and they displace public debate.

The credence complexity issue extends to public policies controlling food attributes. For example, a certification procedure for 'good environmental practices' may be of uncertain significance in terms of impact on the environment, however strictly the farmer follows the codes of practice on the ground. No isolated sign, specification or norm is capable of constituting a classification. Quality designates a class of positions against other classifications. This is a type of relation that cannot enter in the 'objective' consumption technology view. The introduction of the notion of credence into the normative approach highlights the radical incompleteness of knowledge of the properties of goods. But the standard economic approaches that reduce knowledge to information, and hence to problems of distribution of the information, are inadequate in understanding the development of a polymorphic quality universe where information is dynamic. Unlike information, food knowledge corresponds to beliefs regarding distant effects of production or consumption. Beliefs constitute a major dimension of food quality. In shifting from an information paradigm to a knowledge paradigm, according to the terms of Nonaka (1996: 3), we introduce 'a dynamic human process of justifying personal belief toward the "truth"'.

Quality and cognitive paradigms

Although neo-classical consumption theories do not ignore the cognitive limitations of individual consumers, endowed with routinised consumption patterns, nothing has been said in that theoretical perspective about the

process of the emergence of the common knowledge that makes the characteristics of goods objective (Requier-Desjardins 1999). The availability of objective knowledge seems immediate (no forms of knowledge accumulation are presented in information theory), while forms of quality knowledge are contradictory.¹¹ Hence, while room for collectives and intermediaries is denied within the homogenising normative framework, we nonetheless see them creeping into economic argumentation as benchmarks, in order to direct consumers to various credence networks. Collective cognitive resources are considered in the maintenance of technical coordination in a chain, as well as in the formation of reputations and in convergent consumer perceptions of qualities.

In this section, I focus on the cognitive nature of those collective resources, referring to them as cognitive paradigms and conventions of quality. Concretely, if we observe the developments of quality crises and their adjustments, such as the European beef crisis, we see, according to Hirschman, collectives taking ‘exit’ (e.g. vegetarian advocates) or ‘voice’ solutions (e.g. beef labelling). Indeed quality problems are precisely those which concern the diffusion of quality standards so that they become ‘public’. According to Thévenot (1998), we cannot speak of innovation without the successful establishment of a new *doxa* that materialises the way in which a quality is identified, stabilised both in norms and in technical procedures, and thus made reproducible, i.e. guaranteed. This process occurs not in a vacuum but in a world where such stabilised qualities still exist and where some of them oppose the current process. While public investments and services, such as public research, facilitate adjustments by intervening within the local and collective structures of learning, conversely, creative groups invest in and work to take part in public knowledge.

The multiplication of credence goods related to food in a globalising consumer world reflects the multiplication of uncertainty domains in large and complex markets. But, for a long time, heterodox economists have considered that uncertainty in transactions is a distinctive feature of the market economy, not its antithesis. A common objective of the constructivist visions of the economy emphasised knowledge divergences and uneven distribution. The development of the normative economic framework has overridden approaches which address knowledge dynamics, principally the Austrian tradition and evolutionary economic theories. These latter two theories have in common a rejection of the equilibrium perspective and the determinist view of the evolution of economies and societies. They argue that change comes from the variety of the outputs of agents’ interactions. The notion of ‘market’ (or economic competition) corresponds to an ‘economic process’ where innovations are selected. An economy is a dynamic system, where structures and institutions result from the interactions of individual plans and constraint agents.

While evolutionary economists have developed an organisational point of view of production with the notion of routines (Nelson and Winter 1982)

and more extensively the notion of competence, the Austrian economists (notably Hayek) have developed a general theory of the creation of economic knowledge corresponding to entrepreneurial agency. Today these approaches are gaining the interest of economists in a context where innovation occurs in an uncertain world. An active field of research is developing that is engaged in linking heterodox views of institutionalism, Austrian and evolutionary economics, constituting a 'cognitive turning point in economics' (according to Orléan 2002). I now offer a critique inside this general perspective, making the point that, while these theories address knowledge, they have not until recently focused on the consumption process and the creation of quality, an essential part of the general process of the creation of competence. The focus then moves to the integrative capacities of agencies and, finally, to cognitive paradigms in innovation.

The market process challenged by reflexive consumption

The rigid equilibrium approach is rejected by evolutionary economists for whom the creation of variety is at the core of the functioning and progress of the economy, and by the Austrian economists, for whom the aggregation of economic variables make no sense. Consumer choices and habits cannot be summed up in a preference function; nor can producer outputs be represented by a global production function. Capital is essentially heterogeneous because it conceals alternative capabilities, which are not given features but depend on individual yet interactive anticipations. The economy is a complex of interconnected institutions that provide a context of meaning for the actions of individuals. Information available to agents is not systematically cumulative and coherent, and knowledge is changing and distributed within agencies. I discuss the heterogeneity of goods and the consumption process from that perspective, addressing the problem of the frontier between production and consumption and how quality crosses that frontier.

In the Austrian economic tradition, the 'market process', which ultimately designs individual frameworks of production, is a process of discovering opportunities. What is at stake is the discovery of some consensual knowledge able to make production organisation and product design workable. In this sense, the market process includes the process of the creation of quality we are studying. Coming from that perspective, the selection of entrepreneurs' plans interferes with the definition of the functions goods can provide. This observation suggests two sets of questions. First, selected plans are not only monetary investment programmes to procure productive assets but include product design according to the perception of consumer needs and the mode of production organisation. The entrepreneur chooses a means–ends combination and is capable of adapting it from experience. This capacity to choose a framework is generally seen as the defining competence of entrepreneurs, meaning in some ways a reflexive capacity. Second, the pressure of price is not sufficient to transform such complex designs. Entrepreneurial action is one not of maximisation (that is subsequent) but of selection of a productive

framework (or organisational design). The knowledge dynamics which underlie the discovery of designs must be analysed in a manner complementary to the market dynamics.

As several authors have observed, heterodox economics failed to integrate both firm and consumption within a cognitive view of the market process as a subjective process of discovery (see, for instance, Metcalfe 2001; Nooteboom in press). The 'resource-based' or 'capabilities view' of the firm has offered a behavioural approach to the producer.¹² Producers do not find productive knowledge as 'blueprints'; rather productive knowledge is a matter of capabilities (Richardson 1972). Langlois and Cosgel introduce this approach into the consumption process, arguing that the analysis developed in the context of production can translate well both into the domain of consumption and into 'the problem of boundaries between consumers and producers' (Langlois and Cosgel 1996: 5; 1998). In response, it may be said that the consumer faces the same multi-level decision problem as the producer, first with the choice of an action framework and then with the choice of the means (parameters) to achieve the action. The consumption process, as it is a process of action design, has a hierarchical structure similar to that of productive design (Clark 1985). A particular choice made at one level conditions subsequent decision problems and the alternatives available, in regard to the resources available after previous choices, including the allocation of time in the consumption perspective. To engage in the discovery process, consumers as well as producers have to identify new resources, recognise them as relevant and match them with their plans and their own competencies. As in the production process, capabilities in consumption consist of various routines that help in solving problems. Because producers and consumers bring their individual intentions and interpretations of opportunities to exchange relations, they project individual meanings of products. Thus, the challenge for the innovator is to monitor, anticipate and (attempt to) channel the range of meanings different consumers attribute to the products. The consumer is confronted with an equivalent challenge. To include both production and consumption organisation in the global market process implies coping with the issue that agents do not automatically share common knowledge of the structure of production and consumption, or of the choices available in each case (Langlois and Cosgel 1998). The economic problem therefore is one of coordination : 'discovering – or, rather, helping to create – an interpersonally shared structure of transaction'. To put the issue in terms of transaction is not innocent, because it extends the scope of requiring 'common knowledge' to clear the market. As will be seen, if we extend the capabilities approach from the organisation of production to consumption, the product itself cannot be absent from the picture. I then move on to identify a set of tensions between the producer, the product and the consumer.

In traditional Austrian economics, the figure of the entrepreneur represents the single agency ultimately reading the market, even if the sources of knowledge are various. Can we attribute to the consumer the status of an

entrepreneur, assuming that the consumer possesses the power to allocate her own time? We are presented here with two different issues: the organisational form of consumption; and the frontier between production and consumption. Contrary to the capitalist form of production, the process of consumption as such does not include work contracts. The organisational form of consumption is not enterprise-like. Consumption competences are distributed in families, communities, cultures and civil networks in a polymorphic world. In extending the organisational approach of the enterprise to consumption, one must consider the substantial problems arising from the confrontation between quality design (products) and a consumption world not structured as a market. As suggested in previous sections, the issue of time allocation for individuals and households was and still is an important societal issue that significantly conditions innovation in food as well as other domains of domestic consumption. It cannot be seen as a market process, although it does interact with the market.

The second problem with the entrepreneurial view of the consumer, is the problem of the 'boundaries between producers and consumers'. As presented by Langlois and Cosgel (1996: 14), the problem is considered one-sidedly: 'what determines [the boundary is] the extent to which producers will provide the knowledge and routines the consumer needs for successful consumption and the extent to which the consumer *soi-même* will provide them'. This statement reflects a diffusion of knowledge from producers to consumers. While the authors present consumers as active, they are not proactive.

To complete the market process, what appear as gaps in consumer knowledge need to be filled by intermediaries. Langlois and Cosgel emphasise that the problem of explaining boundaries between the market and the final consumer, when considering personal and domestic domains of consumption (food, clothing, housing, transportation, health, education, culture, entertainment and so forth), is different from the explanation of the boundaries of the firm (as, for example, in Langlois and Robertson 1995), because the scope of the substitution between production and consumption is limited and consumers are 'necessarily limited in their production capabilities' (Langlois and Cosgel 1996: 18). Consequently, innovation in consumption routines is viewed as coming essentially from an external source, dependent on the offerings of producers and on the 'technological characteristics of the products'. Innovation by consumers is limited to the recombination of existing possibilities.

Making up the interface, intermediaries, be they merchants, banks or experts, offer a specific service. In this sense they are independent entrepreneurs, as are the other actors in the market process. However, it is assumed that both consumer and producer can invest in the function of intermediation (e.g. buy a travel book or connect with the travel organisation services of an airline company). To describe the capacity of the intermediary entrepreneurs, the authors use the metaphor of the problem of communication between different languages. Intermediaries are translators. But where these

intermediaries get their knowledge from is not specified. What distinctive kind of intermediating knowledge is developed and accumulated, and by whom? What is the special expertise of translation between producer and consumer knowledge, and how is that role of translation institutionalised? These issues are not addressed, and the view of quality they propose here finally is not essentially different from the normative approach I presented in the first section.

In contrast to the building of producers' competences, which have serious constraints of coherence, the impact on the market of the diffusion of consumers' knowledge is generally seen as more erratic, such as the role of fashion in clothing or of food scares and fancies. The entrepreneurial vision of the market process can provide a realistic understanding of the evolution of consumption patterns by giving capabilities to the market intermediaries who operate the correspondence between goods and quality, 'that entail "sense making" rather than rational explanation' (Nooteboom in press). But, both in the normative and in the capabilities approaches to consumption (both adopting a methodological individualist perspective), ultimately products and quality do have not concrete existence as such, because they are totally reconstruable: any product/quality can be freely decomposed and recombined.

Towards products as quality networks

Consumers are intermediaries for other consumers: 'recipes' circulate in every domain, formalising user experiences into consumption repertoires on which local patterns of consumption draw. In this respect, it is similar to the way production routines evolve by the circulation of repertoires from the production front. The previous economists' view of consumption is precisely a view from the market actors. A view from consumption itself, i.e. the study of the social (cultural) patterns of consumption, normally the disciplinary preserve of sociologists or anthropologists, sees the problem of the boundary between the market and the consumers from a different standpoint. From the consumption point of view, if an initial problem is to access the basic knowledge necessary to use purchased things, the enduring problem is how to maintain or enhance the capabilities of those purchased objects and obtain effective and safe service from them during their lifetime, given that things have 'social life' (Appadurai 1986). For example, supposing a consumer already holds a driver's licence, she will quickly learn to drive a car from the point of sale. But the major problem of car consumption today is how to organise financing, car maintenance services, and to enjoy the capabilities offered by the car in safe conditions. From the point of view of the evolution of consumption patterns, contrasting stories of the interface of households and domestic groups and the market could be told (Hareven 1990). Innovation springs not only from market opportunities and changes in the organisation of work in firms and services but from domestic and civil organisations, and from the evolution of communities and individual agencies. If seemingly few technical capabilities are extracted by industry from

domestic routines, that does not signify that innovation in consumption, i.e. the evolution of consumption patterns, does not transmit knowledge to the production sphere. In such an alternative view of the frontier, intermediaries appear more as integrators than as simple translators.

If we adopt a holistic view, consumers, intermediaries and producers create quality definitions to which a 'product' has to conform from its origin to its final disappearance in the consumption process. The notions of the origin and disappearance of a product (or service) are relative, as are its boundaries. Fundamental debates around credence qualities concern both these types of frontier of the product. Does a food product disappear, and with it the responsibility of its manufacturer, once it has been eaten? Or are unforeseen impacts on the future health of the consumer part of the product and its quality (what economists call stock externalities)? Is it possible to locate definitively an origin for particular characteristics (prions in BSE, for example)? Neither technical decomposition of the product nor property rights approaches give a complete response to these accountability issues as they emerge. Things (and thus goods) have life because they retain properties the scope of which is determined by the social context, as, for example, with the performance and the duration of a car or food. Certainly some institutional arrangements can help the market deal with that problem and to mitigate it through quality agreements or conventional understandings (and economists can reflect on how to design such mechanisms). But such questions are persistent and jeopardise quality conventions; they even grow in the context of globalisation. Ultimately, a product cannot be considered as having a finite set of properties as it reveals evolving qualities along its undetermined life-cycle and gives rise to unexpected uses or capabilities. This observation invites us to consider products, and thus product quality, as networks across the market and consumption. A product is an intermediary node in a network, whose meanings are continually problematised with the globalisation of markets.

In a network perspective, quality cues and intermediaries are condensers that provide some contextual and often contested, yet global, knowledge of a product. Qualities in globally criss-crossing networks cannot be combined and recombined at will, contrary to Lancasterian characteristics. The essence of quality resists technical and logical decomposition. A bundle of specified characteristics, as the product presents itself in a contractual transaction, does not make sense in itself, but acquires quality only by mobilising mental images, provided by networks in which the product is embarked, in the transactors' brains. In that perspective, a credence attribute refers to a quality that cannot be broken down into components to be mapped, one-to-one, on to itemised consumer experiences.

I propose to distinguish between material characteristics corresponding to the sheer features of the product and immaterial non-experience-based attributes. The Lancasterian approach to the market frontier (see pp. 66–9) works as long as immaterial qualities are linked with materials. It is generally

possible to show some linkages, such as those between the sensation of speed and the power of the car engine, but this is of little interest in the real consumption process. Imagine all the intermediaries that intervene in the relationship between time, distance and the performance of a car, and beyond that, the fact that all of the intermediaries overlap in a complex world, including traffic conditions and regulation. In such a network speed-limit regulations are 'immaterials'. By that I mean more than that the speed-limit signs are interpretable by normal drivers: these injunctions qualifying traffic infrastructures result from a globalised and distributed experience. Food is a comparable world, yet much more polymorphic. Immaterials in a product network function as global quality references. Immaterial attributes of food products include tradition, origin, hygiene, health, etc., as well as the product names in general. It is by naming and designing such immaterials that quality has found itself as constitutive rule.

Actor-network theory aims to dissolve modernist categories, such as nature and society, structure and agency, or micro- and macro-analytical distinctions, arguing that these antinomies emerge only in the processes of network formation. Network-building involves heterogeneous materials and immaterials in intermediary entities. The network's ability to exchange capabilities within these entities constitute them as intermediaries. In that perspective, a new sociology of food gives salience to 'the status of nature' (Goodman 1999), including anthropological perspectives (Poulain 2002), and reintegrates nature through the construction of food quality in recursive agro-food networks of production and consumption (Stassart 2003). Quality attribution comes from politics, as an interaction of global networks. Referring to Urry (2000), Murdoch and Miele note that 'the traditional forms of stability associated with discrete societies have given way to a world of flows in which goods, images, peoples, technologies and other artefacts criss-cross long established boundaries and borders'.¹³ Thus complex processes connect demand and consumption (Harvey et al. 2001). In my view, the implications of particular interest for economists derivable from that approach are related to the unsatisfactory economic notions of 'externalities' and 'quality' (see Callon 1998). Both refer to problems brought on to the public agenda in certain circumstances and appear as social constructs rather than as purely natural or technological properties of the production process. An actor-network approach argues that capabilities acquire material, organisational and cognitive supports that are integrative for a network, but only as an emergent property. This stress on the emergence of integration draws us towards evolutionary economics perspectives, and it is fruitful to explore a convergence of approaches in relation to the emergence of conventions of quality, including their institutional and cognitive supports, for their integrative capacities.

Integrative capacity, as defined here, is a cognitive nexus that allows for some continuity of behaviour by adaptation to changes in context. Considering quality as integrative (global) knowledge, the deployment of integrative

capacities results in a process of establishing quality, or ‘qualification’. To ‘qualify’ goods (to condense quality networks), integrative knowledge incorporates an adaptivity or flexibility to factor variations. According to the evolutionary approach (Nelson and Winter 2002: 29), ‘the basic behavioural continuity issue can be addressed in terms of skills, routines, learning and cognition’. The notion of routine provides the basic integrative knowledge that assures the feasibility (or the coherence) and the efficiency of the tasks that individuals and organisations have to perform, in a given framework but in variable contexts. The problem of behavioural continuity is, however, multi-scaled:

[I]n particular, continuity derives from sustained commitments to organisational strategies and heuristics that presumably involve higher-level cognitive processes in the individuals involved . . . In a still broader context, cognitive frameworks and paradigms are known as a source of long-lasting influence and continuity for both scientific disciplines and industrial technologies. (Nelson and Winter 2002: 32)

To add a consumption perspective, I would include identity commitments and the cognitive frameworks constituted through quality networks.

Evolutionary models distinguish between a ‘superior’ level of regularity, referring to a whole productive organisation (firms or other types) or to the institutional settings of an economy, and an ‘inferior’ level where the routines emerge through individual and collective learning from experience. Evolutionary theorists stress that linkages between emergent regularities at ‘superior’ levels and integrative processes at ‘inferior’ levels are the outcome of a complex co-evolution in time (Dosi and Winter 2003). While structures with integrative power can be considered as quasi-invariants for a period of time, they remain provisional and retain ambivalence. Credence goods can be seen as an example of this quasi-invariance in relation to certain product networks.

Three types of support of integrative capacity can be distinguished in the literature: the classic figure of the entrepreneur (discussed earlier); (quality) convention as collective learning (see Favereau 1998); and routine in the evolutionist approach. In the above definition, routines are integrators at the first level. The figure of the entrepreneur corresponds to an integrative economic capacity, and, if the true capacity of the entrepreneur is in the design of organisations (choice of a ‘framework’ in the above terminology), this can be seen as meta-routine. A meta-routine has the character of a *regularity* and not of a *rule* due to the ambiguous co-evolution between the levels of integration. In the same perspective, it has been seen, a network product is a complex integrator. Quality conventions that structure a product network as knowledge integrators can also be seen as meta-routines, designing the particular combinations of knowledge acquired in a product’s lifetime capabilities. The same methodological comments apply. The combination constituted by a quality represents some regularity of the understanding of the characteristics of the product within different contexts, including production and consumption.

But quality by itself is not an intangible set of rules, even if in certain hierarchical or formalised cooperative contexts a convention of quality can be inscribed in a set of rules. Furthermore, as I have argued, the frontiers of product networks are pushed away by globalisation processes.

Although quality represents 'common' knowledge, this commonality cannot be seen as the sharing of the same imaginative representations. While the circulation of quality knowledge allows for the recognition of capabilities integrated in the product in different contexts, to a certain extent these are idiosyncratic contexts of integration (or disintegration) of the product capabilities which can be seen as co-evolving rather as determined one after the other in a linear diffusion of knowledge. In that perspective, what I have called a product network articulates several contexts of integration and several quality conventions, which are knowledge integrators on characteristics more-or-less in competition with each other in local, variably-bounded, contexts of fabrication or of usage. Emergent food product networks overlap each other in the food quality economy. It is at this meta-level, that we can speak of cognitive frameworks and paradigms.

Integrative cognitive paradigms in food innovation

To reconcile emergence and integration, continuities and discontinuities, we need to consider innovation in terms of the dynamics of 'knowledge systems' (Foray 1998). While some approaches discussed above seem to allow for an infinite differentiation of products, I emphasise the critical role of integrative capacities which sustain quality systems and product networks at different levels, from the individual producer or consumer competence-building to policy design. Following Allaire and Wolf (2001), two alternative cognitive paradigms are introduced which function as meta-routines in the process of quality creation. I call them the logic of decomposition and the logic of identity.¹⁴ Learning or knowledge creation, in Hayek's perspective, results from changes in a constituted 'cognitive map' by elementary processes of 'reclassification' and 'recombination' of knowledge. While these two processes are joined in the design of new knowledge, they separately offer, as 'rational myths' (according to Hatchuel 1995), innovation paradigms that shape expectations and the representations of problems. In the first logic/myth, the variety of goods is made possible by the decomposition into single traits of functional attributes and their subsequent recombination into product capacities. The complementary process of reclassification is ignored. This logic fits with Lancaster's model and functions only on the hidden assumption that current quality conventions allow classification precisely due to their integrative capacities. The second integrative paradigm is rooted in a claim to establish distinctive identities. It refers to classification as a process of incorporation into holistic frames of knowledge that precludes decomposition. These two logics/myths nourish innovation paradigms and they competitively and complementarily structure knowledge systems, or, in other words, the quality creation process. While the first is representative of the technological

logic of the production viewpoint, the second corresponds more to the client logic of marketing.

As a pattern of complementary innovation, I see decomposition/recombination applying to agronomic inputs and food end-products by entailing a conception of an agriculture and food premised on a splitting down of information and material into discrete 'bits' in a serial linear process. The decomposition paradigm gives valuable representations to the evolution of information structures in the agriculture and food global system of innovation premised on the collection of highly detailed data through continuous automated monitoring at all stages of production and marketing. According to this paradigm the creation of new products, markets and consumption arenas is predicted by permutations within rapidly expanding databases (Allaire and Wolf 2001). Communication technologies in the production and marketing domains, such as bar-coding, electronic data interchange and precision farming, contribute to an overall database integration. These technologies offer a potential means by which to enhance efficiency and the capacity to differentiate over time through a kind of automated learning (modularity).

The second paradigm, the logic/myth of identity, is exemplified by products, referred to as credence goods, bearing transcendent identities (Allaire and Wolf 2001). Allaire and Wolf include in that paradigm all forms of product individualisation, such as trademarks or other names and cultural attributes, making up the class of immaterial external product attributes. In different contexts – direct marketing, certification procedures and labels, competitions and rating guides, medical consultations, etc. – consumers are provided with global evaluations on food products and services. In this chapter, the emphasis is on the development of this myth as an heuristic device for understanding the notion of quality.

The decomposability paradigm corresponds to the cognitive logic of the experimental method that breaks down a function into independent factors. What is called 'function' in logical or formal terms corresponds to what I earlier defined as integrative capacity. Consider the classic agronomic function of production for a given parcel of land. The problem is one of identifying, in a given situation, the factors which contribute to the yield and those which limit it. Only a realistic but decomposable framework can offer a solution, albeit one limited to that framework. Factors on which we can carry out experiments are extant material and immaterials. Classic contributing agronomic factors such as minerals, the soil structure, available water and sunlight all exist in accumulated scientific agronomic knowledge as measurable characteristics. This scientific knowledge can exist both in private corporations and in the public domain. The decomposable existence of 'factors' makes it possible for the emergence of an integrative capacity that allows actors to design, for example, a fertilisation procedure. In turn, this procedure becomes a given which can be considered in further experimentation as an extant factor. Digital monitoring, as in precision farming, offers a

prodigiously enhanced set of experience records as the entire farm and entire sets of farms became related in seamless sets of recorded data (presented here in an optimistic light; see Wolf and Wood 1997). Super databases seem to attribute infinite power to that logic in order to attract significant investment. The power of that logic/myth in ordering the industrial world is not to be denied (and it is dependent on the distribution of property rights and on prevailing conventions regarding the circulation of knowledge, but those are other issues). But the efficiency of that process is limited by the unstable linkages between co-evolving levels or contexts of integration, discussed earlier. We cannot add attributes corresponding to immaterial qualities, such as the qualification 'organic', or even certain qualifications produced by labelling, as factors independent of agronomic technical functions as such. To include such issues, the problem would need to be broken down into different levels of integration (reclassification).

The identity paradigm offers heuristics to qualify a capacity as a whole (and not in the form of a decomposable function). As Appadurai (1986: 5) puts it: 'even though from a theoretical point of view human actors encode things with significance, from a methodological point of view it is the things-in-motion that illuminate their human and social context'. To return attention to the things themselves, some 'methodological fetishism' is needed for the social analysis of the world of commodities. I emphasise that the analyst, in so doing, works in the same way as do ordinary consumers, to whom quality representations are fetishistic heuristics rooted in fetishistic metrics and mottoes. We are confronted here with qualification resources that have an identity power or which bring 'transcendent' qualification (Allaire and Wolf 2001). Within the identity paradigm, for example, origin cannot be reduced to the physical characteristics of the product. Transcendent resources not only have a strategic power, but as rational myths they offer a cognitive structure to integrate quality. Philosophical principles are embedded in organic food, aesthetics in natural food, solidarity in fair-trade food, and so on. These immaterials are incorporated by products through images that ultimately make these identity resources recognisable in the form of product networks engaged in the economy of signs.

A paradox inherent to identity-based innovation is that diffusion of identity resources does not require symmetry among actors' commitments and competences. Identity networks retain coherence in the face of the transfiguration of quality imagery, when such changes are consonant with actors' commitments and competences. Diffusion of identity in large markets is premised on individuals manipulating and interpreting images. Product networks expand as identity diffuses through acculturation, and emergent networks may coalesce through politics. Alternative food images include, for example, representations of community-specific resources, while the current local rural development strategies developed under the EU Agenda 2000 regulation generally include representations of food alternatives (direct sales, farmers' markets, organic products, etc.). Organic standards prescribe non-GMOs,

which is a quality not justified by publicly recognised objective effects of GMOs, but by a global representation of genetic engineering. People who feel nervous about GMOs tend to turn to organic products (an alternative quality framework) or at least to include perspectives from the organic discourse in their quality framework. The same (unstable) link appears when one reads: 'You dreamed it, Sony does it.' But, in the previous example, alternatives (the organic dream) refer to (integrative) community values, while the message of Sony refers to the values of individuals. Mechanisms of image translation create, reshape and transmit knowledge, thereby extending markets for differentiated products. Integration mechanisms that extend identity networks by replacement and transfiguration of imagery are poorly recognised by purists within the myth of identity, while the key objective for cooperation among proponents is to extend such networks. Here concern is with the ways in which the logic of identity is confronted by accountability demands from those who desire entry, and thus want the identity to become public. As Allaire and Wolf (2001) emphasise, identity networks that expand via commerce and various social movements invite accountability challenges, as industrial trademarks have done. Each time, network extension obliges products to conform to various qualities. The standards of evidence associated with such challenges of legitimacy will often be incompatible with the information structures of immaterial resources on which the distinctive identity rests. But, within that framework, it is possible to develop an analysis of the institutional hybridisation of quality networks.

Conclusion

In this chapter, through a survey of consumption and quality theories in mainstream and heterodox economics I have contrasted a normative approach to quality based on information theory in which quality appears as meta-information to a subjective and reflexive approach to knowledge which presents quality as an ambivalent integrative capacity, or meta-routine (or convention). The normative approach extends to the analysis of private, collective and public initiatives to mitigate any asymmetry of information related to products on the market. However, the knowledge that enables signs to circulate with products is left out of the picture. The production and consumption worlds are assumed to be coherent as a theoretical consequence of the equilibrium perspective, and perhaps as a cultural credence to 'science'.

In questioning this approach to quality as market failure and a substitute for information, insight is gained into theoretical problems arising from persistent and renewed diversity in globalised markets. The characterisation of goods by the information they are able to display ultimately depends on market institutions and consumers' collective behaviours. The radical incompleteness and ambiguity of the market nomenclature and of qualification mechanisms have thus to be thought of from an institutional and evolutionary perspective.

To adopt the 'quality turn' stressed in the specialised literature, we need to do more than develop a theory of consumption, even a theory including learning and capabilities in the manner of institutionalist theories of production. The domain to be embraced extends from farm to fork, and importantly the reverse, which is the current challenge for innovation studies related to quality. In orthodox economic approaches, the solution to the information gap concerning quality and capabilities is sought in improving ways that producers can monitor consumers' changing needs and preferences in global markets. I have argued, however, that the information gap is not organisational but *societal*, and that knowledge cannot be reduced to information messages.

Concrete products result from complex networks. To analyse the stabilisation of quality conventions, I have distinguished two cognitive logics, that are also myths in the sense that they refer to only one of the two aspects of the knowledge creation. The first, the logic/myth of decomposability, faced with an expanding number of product attributes, attempts to deepen standardisation and synthesis by producing ever more public standards aimed at clarifying and securing final consumption markets. While this vision sustains procedures of public accountability, it is challenged in a context where different qualities proliferate. Differentiation in a knowledge-based economy involves differentiation both of products and of people. Innovation, which formerly was oriented by specialist professional networks, now develops in complex and open innovative networks. A critical role is played by coordinating structures in processes of learning and by integrative capacities in quality innovation. While, in the global market, contractual and certification procedures have emerged as a central arena in which control over quality is regulated, the debate on accountability reflects a pattern of more immaterial and service-oriented consumption. The second logic/myth relates to immaterial resources which develops an ever-expanding universe of different quality identities, based on holistic cognitive frameworks. At the same time, food scares have put the construction and articulation of agro-food networks under interrogation by bringing to light the hidden relations between food and nature.

A wide diversity of examples of hybridisation in quality creation is to be found in the studies presented in the present volume. Local markets exhibit at the same time both fashion cues and certified labels. Organic and other alternative foods can be found in supermarkets, threatening the preservation of identity by antithetical logistical procedures and contrary standards. Both in their development and in their solutions, crises in large distribution systems, such as the BSE crisis, show the same result: the multiplication of knowledge of quality and the complexification of the world as product networks expand. In western eyes, two myths that shape that world are in a constant dialectic. The myth of Prometheus, the mission of science at the endless frontier of the decomposition of knowledge in defiance of the unknowable domains of the gods, is constantly vying with the myth of the origin of knowledge which is at the inner core of identity.

Notes

- 1 The author thanks Steven Wolf and Jean Gadrey for the initial inspiration for this work, Mark Harvey and Kate Mailfert for very helpful editing contributions, but remains entirely responsible for any insufficiencies in the text.
- 2 The agro-food 'actor-network' literature has been in English, except for the recent work of Stassart (2003), who developed outstandingly the conceptual repertoire of the actor-network theory in the treatment of the food provision system through the study of two Belgian beef *filières*. Comparable research published in France refers to the 'convention' theory. The critique offered by Lockie and Kitto (2000) concerning the focus on 'alternatives' as the operators for food deconstruction can be extended to those comparable in the French literature of the 1990s. But, this critique is harsh because the authors consider a restricted corpus. Besides the rural sociology literature both convention or actor-network approaches have developed in domains of research connected with food issues such as the sociology of risk, and have shed light on complex hybrid networks. Agro-food networks are revisited in the second section.
- 3 Karpik (1989) distinguishes social tools that create and diffuse quality judgements and social tools that build trust regarding quality definitions. These two dimensions of the notion of quality are generally emphasised by economic sociology, innovation sociology and heterodox economics.
- 4 The notion of 'convention of quality' (Eymard-Duverniet 1989) introduced a plurality of modes of qualification, corresponding to different modes of the assessment of quality. Conventions of quality do not support isolated worlds, but rather a plurality of conventions of quality coincides today with the polymorphic world emerging from the 'quality turn'.
- 5 A constitutive rule, one that can be noted 'X counts as Y in C' (in a context C), 'determines a set of institutional facts and institutional objects where the Y term [quality characteristic, e.g. "vitamins added" or "no GMOs"] names something more than the sheer physical features of the object named by the X term [the product components, e.g. "nutritional fact" or "less than X per cent of GMO ingredients"]'. Furthermore, the "counts as" locution names a feature of the imposition of a status to which a function is attached by way of collective intentionality, where the status and its accompanying function [in other words, the capacity named by Y] go beyond the sheer brute physical functions that can be assigned to physical objects' (Searle 1995: 44).
- 6 The norm ISO 8402 defines quality as 'the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs'.
- 7 Through information theory, reputation mechanisms can be seen by economists both as making possible the ordering of qualitative differences in respect of a product type and as a trait functioning as an economic signal. But, on their side, organisation scholars generally see corporate reputation as rooted in the meaning-developing experiences of employees (Fombrun and van Riel 1997), thus introducing complex intermediaries to the process of reputation-building. This second approach fits better with the developments outlined in the second section.
- 8 While consumer behaviour and the marketing literature favour perceived quality or quality attributes, the food sciences literature addresses measurable properties, counting them as product characteristics. Although these literatures deliver heterogeneous knowledge, they are formally integrated by economists in Lancaster's

framework, in which the market outcome for quality is determined by the supply of characteristics, the demand for attributes and the information of the consumer regarding the distribution of attributes.

- 9 The seminal paper by Becker is devoted to the issue of the allocation of time. It provides a framework for the development of household economics, including the classic producer–consumer model of the peasant household. The substitution trend I am evoking developed, in part, in the household. But more generally, and in particular when services are at stake, the time–goods substitution concerns personal consumption: eating out, phoning, professional training, entertainment, and so on, are more personal than are household services. Their development implies a certain degree of individualisation of the usage of time and purchasing decisions. It is through that individualisation that health issues related to consumption became a large public concern.
- 10 The main role in the design of commercial food quality has shifted from the merchants (who formerly used the source or origin of the products as a benchmark in quality assessment at a time when agricultural resources were localised) to industrial companies and then to retailers. To some extent active industrial restructuring and concentration have weakened the role of industrial trademarks, while more global concerns about consumption that involve the entire chain (e.g. green labels) seem to be more easily handled by retailer networks.
- 11 The normative framework integrates qualitative attributes only if they are reduced to an homogeneous system of functions of objective characteristics (see the first section).
- 12 See Montgomery (1995).
- 13 Quoted by Murdoch and Miele (2003: n.p.); the authors introduce a note of caution to Urry's argument: 'while, on the one hand, networks might appear to be increasingly mobile, that is, increasingly disconnected from given spaces they also, on the other hand, act to condense space (and time)'. They explain how networks condense space or territories by using the conventionalist approach. We find a parallel with the idea of network condensation of quality which we have referred, on our part, to 'transcendent' attributes (Allaire and Wolf 2001).
- 14 In this sub-section I draw on Allaire and Wolf's paper (2001), the purpose of which was to analyse contemporary differentiated ways in which food evolves through various networks of knowledge diffusion and creation. We opposed the two paradigms as alternative ways of differentiating food networks, providing 'functional' versus 'identity' food, but emphasised that the globalisation of agro-food networks was combining governance institutions related to those two paradigms. My intention here is to relate these cognitive frameworks to the discussion of the economic approach of quality.

References

- Akerlof, A. G. (1970), 'The market for lemons: quality uncertainty and the market mechanism', *Quarterly Journal of Economics*, 84, pp. 488–500.
- Allaire, G. (1995), 'Croissance et crise en agriculture', in Boyer, R. and Saillard, Y. (eds), *Théorie de la Régulation: L'Etat des Savoirs*, France, La Découverte.
- Allaire, G. (2002), 'L'économie de la qualité, en ses territoires, ses secteurs et ses mythes', *Géographie, Economie et Société*, 4(2), pp. 155–80.

- Allaire, G. and Wolf, S. (2001), 'Cognitive representations and institutional hybridity in agrofood innovation', Toulouse, INRA-ESR, forthcoming in *Sciences, Technology and Human Values*, 2004.
- Anania, G. and Nisticò, R. (2002), 'Public regulation as a substitute for trust in quality food markets: what if the trust substitute cannot be fully trusted?', Working Paper, Italy, University of Calabria.
- Appadurai, A. (ed.) (1986), *The Social Life of Things: Commodities in Cultural Perspective*, Cambridge, Cambridge University Press.
- Arce, A. and Marsden, T. (1993), 'The social construction of international food: a new research agenda', *Economic Geography*, 69(3), pp. 293–311.
- Barjolle, D. and Sylvander, B. (2002), 'Quelques facteurs de succès des "produits d'origine" dans les filières agroalimentaires européennes', *Economies et Société* (September–October), Cahiers de l'ISMEA, Série Systèmes Agroalimentaires, 25, pp. 1441–64.
- Barthes, R. (1972 [1957]), *Mythologies*, trans. Lavers, A., Paris, Editions du Seuil, and New York, Hill & Wang.
- Becker, G. (1965), 'A theory of the allocation of time', *Economic Journal*, 299(74), pp. 493–517.
- Boltanski, L. and Thévenot, L. (1991), *De la Justification: Les Economies de la Grandeur*, Paris, Gallimard.
- Callon, M. (ed) (1998), *The Laws of the Markets*, Oxford, Blackwell.
- Chamberlin, E. (1933), *The Theory of Monopolistic Competition*, Cambridge, MA, Harvard University Press.
- Clark, K. (1985), 'The interaction of design hierarchies and market concepts in technical innovation', *Research Policy*, 14(5), pp. 235–51.
- Darby, M. and Karni, E. (1973), 'Free competition and the optimal amount of fraud', *Journal of Law and Economics*, 16 (April), pp. 67–88.
- Dosi, G. and Winter, S. G. (2003), 'Interprétation évolutionniste du changement économique: une étude comparative', *Revue Economique*, 54(2), pp. 385–406.
- Eymard-Duvernay, F. (1989), 'Conventions de qualité et pluralité des formes de coordination', *Revue Economique*, 40(2), pp. 329–59.
- Favereau, O. (1998), 'Notes sur la théorie de l'information à laquelle pourrait conduire l'économie des conventions', in Petit, P. (ed.), *L'Economie de l'Information: Les Enseignements des Théories Economiques*, Paris, La Découverte.
- Fombrun, C. and Riel, C. van (1997), 'The reputational landscape', *Corporate Reputation Review*, 1(1–2), pp. 1–16.
- Foray, D. (1998), 'The economics of knowledge openness: emergence, persistence and change of conventions in the knowledge systems', in Lazaric, N. and Lorenz, E. (eds), *Trust and Economic Learning*, Cheltenham, Edward Elgar.
- Goodman, D. (1999), 'Agro-food studies in the "age of ecology": nature, corporeality, bio-politics', *Sociologia Ruralis*, 39(1), pp. 17–38.
- Goodman, D. (2002), 'Rethinking food production–consumption: integrative perspective', *Sociologia Ruralis*, 42(4), pp. 271–7.
- Hareven, T. K. (1990), 'A complex relationship: family strategies and the processes of economic and social change', in Friedland, R. and Robertson, A. F. (eds), *Beyond the Marketplace: Rethinking Economy and Society*, New York, A. de Gruyter.
- Harvey, M., McMeekin, A., Randles, S., Southerton, D., Tether, B. and Warde, A. (2001), 'Between demand and consumption: a framework for research', Discussion

- Paper No. 40, Manchester, ESRC Centre for Research on Innovation and Competition, University of Manchester.
- Hassan, D. and Monier-Dilhan, S. (2002), 'Signes de qualité et qualité des signes: une application au marché du Camembert', *Cahiers d'Economie et Sociologie Rurales*, 65, pp. 24–36.
- Hatchuel, A. (1995), 'Les marchés à prescripteurs', in Verin, H. and Jacob, A. (eds), *L'Inscription Sociale du Marché*, Paris, L'Harmattan.
- Hirschman, A. O. (1970), *Exit, Voice and Loyalty: Responses to Decline in Firms, Organizations and States*, Cambridge, MA, Harvard University Press.
- Kalaitzandonakes, N. (2000), 'Functional foods: technical, institutional and market innovation', *AgBioForum*, 3(1), pp. 259–60, available: www.agbioforum.org.
- Karpik, L. (1989), 'L'économie de la qualité', *Revue Française de Sociologie*, 30(2), pp. 187–210.
- Katz, M. and Shapiro, C. (1985), 'Network externalities, competition and compatibility', *American Economic Review*, 75(3), pp. 424–40.
- Kindleberger, C. (1983), 'Standards as public, collective and private goods', *Kyklos*, 36(3), pp. 377–96.
- Lancaster, K. J. (1966), 'A new approach to consumer theory', *Journal of Political Economy*, 74(2), pp. 132–57.
- Lancaster, K. J. (1979), *Variety, Equity and Efficiency*, New York, Columbia University Press.
- Langlois, R. N. and Cosgel, M. M. (1996), 'The organization of consumption', Working Paper 7, Storrs, University of Connecticut.
- Langlois, R. N. and Cosgel, M. M. (1998), 'The organization of consumption', in Bianchi, M. (ed.), *The Active Consumer*, London, Routledge.
- Langlois, R. N. and Robertson, N. (1995), *Firms, Markets and Economic Change*, London, Routledge.
- Lash, S. and Urry, J. (1994), *Economies of Signs and Space*, London, Sage.
- Lockie, S. and Kitto, S. (2000), 'Beyond the farm gate: production–consumption networks and agri-food research', *Sociologia Ruralis*, 40(1), pp. 3–19.
- Loureiro, M. L. and McCluskey, J. J. (2000), 'Assessing consumer response to protected geographical identification labelling', *Agribusiness*, 16(3), pp. 309–20.
- McMeekin, A., Tomlinson, M., Green, K. and Walsh, V. (2002), *Innovation by Demand*, Manchester, Manchester University Press.
- Marsden, T. and Arce, A. (1995), 'Constructing quality: emerging food networks in the rural transition', *Environment & Planning A*, 27(9), pp. 1261–79.
- Metcalf, J. S. (2001), 'Consumption, preferences, and the evolutionary agenda', *Journal of Evolutionary Economics*, 11(1) (special issue), pp. 37–58.
- Montgomery, C. (1995), *Resource-Based and Evolutionary Theories of the Firm*, Dordrecht, Kluwer Academic.
- Murdoch, J., Marsden, T. and Banks, J. (2000), 'Quality, nature and embeddedness: some theoretical considerations in the context of the food sector', *Economic Geography*, 76(2), pp. 107–25.
- Murdoch, J. and Miele, M. (2003), 'Culinary networks and cultural connections: a conventions perspective', in Hughes, A. and Reimer, E. (eds), *Geographies of Commodity Chains*, Harlow, Pearson Education.
- Nonaka, I. (1996), '"Knowledge has to do with truth, goodness, and beauty": conversation between Professor Ikujiro Nonaka, Tokyo, and Claus Otto Scharmer', available: www.dialogonleadership.org.

- Nelson, P. (1970), 'Information and consumer behavior', *Journal of Political Economy*, 78(2), pp. 311–29.
- Nelson, R. R. and Winter, S. G. (1982), *An Evolutionary Theory of Economic Change*, Cambridge, MA, Harvard University Press.
- Nelson, R. R. and Winter, S. G. (2002), 'Evolutionary theorizing in economics', *Journal of Economic Perspectives*, 16(2), pp. 23–46.
- Nooteboom, B. (forthcoming), 'Discovery and competence in production and consumption', in Backhaus, J. (ed.), *Recent Developments in Austrian Economics*.
- Orléan, A. (2002), 'Le tournant cognitif en économie', *Revue d'Economie Politique*, 112(5), pp. 717–38.
- Poulain, J. (2002), *Sociologies de l'Alimentation*, Paris, Presses Universitaires France.
- Requier-Desjardins, D. (1999), 'Producer–consumer approach: from consumer's [sic] preferences to consumption technology', Centre d'Economie et d'Ethique pour l'Environnement et le Développement (C3ED), available: www.c3ed.uvsq.fr/eesdp_line/maqt_DRD/preftec.pdf.
- Richardson, G. B. (1972), 'The organisation of industry', *Economic Journal*, 82(327), pp. 883–96.
- Searle, J. R. (1995), *The Construction of Social Reality*, Harmondsworth, Penguin.
- Shapiro, C. (1983), 'Premiums for high quality products as a return to reputations', *Quarterly Journal of Economics*, 98(4), pp. 659–79.
- Stassart, P. (2003), *Produits Fermiers: Entre Qualification et Identité*, Brussels, Peter Land.
- Stigler, G. (1961), 'The economics of information', *Journal of Political Economy*, 69(3), pp. 213–25.
- Stigler, G. and Becker, G. (1977), 'De gustibus non est disputandum', *American Economic Review*, 67(2), pp. 76–90.
- Stiglitz, J. (1987), 'The causes and consequences of the dependence of quality on price', *Journal of Economic Literature*, 25 (March), pp. 1–48.
- Sylvander, B. (1997), 'Le rôle de la certification dans les changements de régime de coordination: l'agriculture biologique, du réseau à l'industrie', *Revue d'Économie Industrielle*, 80(2), pp. 47–66.
- Sylvander, B. (2003), 'Crédibilité et flexibilité de la certification dans un contexte de globalisation et de crises alimentaires: le cas de l'agriculture biologique', Le Mans, INRA-UREQUA (Department of Rural Economy and Sociology).
- Thévenot, L. (1998), 'Innovating in "qualified" markets: quality, norms and conventions', paper presented at the workshop 'Systems and trajectories for agricultural innovation', 23–25 April, University of California, Berkeley.
- Tirole, J. (1988), *The Theory of Industrial Organization*, Cambridge, MA, MIT Press.
- Urry, J. (2000), *Sociology beyond Society: Mobilities for the Twenty-First Century*, London, Routledge.
- Warde, A. and Martens, L. (2000), *Eating Out: Social Differentiation, Consumption and Pleasure*, Cambridge, Cambridge University Press.
- Whatmore, S. and Thorne, L. (1997), 'Nourishing networks: alternative geographies of food', in Goodman, D. and Watts, M. (eds), *Globalising Food: Agrarian Questions and Global Restructuring*, London, Routledge.
- Wolf, S. and Wood, S. (1997), 'Precision farming: environmental legitimization, commodification of information, and industrial coordination', *Rural Sociology*, 62(2), pp. 180–206.