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The case of food supply

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Abstract

The so called “socio-technical transitions” is driven by actors such as firms and industries, policy makers and politicians, consumers, civil society, engineers and researchers. This paper addresses the role of consumers in the transition process and their interaction with the established socio-technical (ST) regime. Then the questions that it follows to answer are: do the consumers can address for changes in the established regime? Which are the mechanisms hindering a transition driven by consumers? Is there a consumer innovation life cycle? The emergence of new designs in the established food supply ST regime will be used as an empirical test case. The conceptual framework enriches the multi-level perspective with insights from organization studies, both in industrial and social organization research field.

The growing dissatisfaction for the established food supply, dominated by the duopoly supermarket-global food supplier, has driven few pioneers to search for new designs. To point out this innovative process of “bottom-up” innovation into the food supply regime, a case study is presented. The case of Italy illustrates several important consumer-related aspects of innovations and their influence on the established regime. In order to disclose the mechanisms moving forward the process of change in the food supply network, a number of questionnaires was submitted to informal network of consumers. Furthermore, in order to trace how consumers innovation in the food supply may evolve over time we propose a model which consists of four different phases drawn on the answers to the fifth question in the questionnaire (Past trajectories and future development).

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1. Introduction

Our society is challenged by a few important environmental problems, such as climate change, loss of biodiversity, and resource depletion (clean water, oil, forests, fish stocks, etc.). In order to solve these problems, deep-structural changes in transport, energy, agri-food and other systems are required (Elzen et al., 2004; Van den Bergh and Bruinsma, 2008; Markard et al., 2008; Grin et al., 2010). These systemic changes deal with the so called “socio-technical transitions”, as they require a deep re-configuration of transport, energy, and agri-food systems, which entail technology, policy, markets, consumer practices, infrastructure, cultural meaning and scientific knowledge (Elzen et al., 2004; Geels, 2011). The transition is driven by actors such as firms and industries, policy makers and politicians, consumers, civil society, engineers and researchers. Transitions are therefore complex and long-term processes comprising multiple actors.

This paper addresses the role of consumers in the transition process and their interaction with the established socio-technical (ST) regime. The importance of involving the citizens (in the literature either consumers or users) in the process of innovation is not a new topic (Teubal, 1979; von Hippel, 1986, 1988; Morrison et al., 2000; Truffer, 2003), although today the awareness of consumers worldwide about the pressing environmental problem has increased dramatically (von Hippel et al., 2011). Many social movement organizations (SMO) and other spontaneous association of citizens are addressing a better quality of life in terms of health, social inclusion and environment. In order to resolve the alleged contradiction between environmentally responsible behaviour and a satisfying life (Brown and Kasser 2005), many consumers refuse a passive role in the economic system. This is in opposition with the well established among economists and policymakers Schumpeterian idea of product innovation (1934), as a producer activity, with consumers simply selecting among different offers provided on the market. In this paper, in line with other studies (for a review see Baldwin et al., 2006; von Hippel et al., 2010) we argue that consumer-developed innovations appear to be complements rather than substitutes for producer innovations.

Then the questions that this paper follows to answer are: do the consumers can address for changes in the established regime? Which are the mechanisms hindering a transition driven by consumers? Is there a consumer innovation life cycle? The emergence of new designs in the established food supply ST regime will be used as an empirical test case.

The present paper is structured as follow: section 2 introduces the theoretical framework; section 3 describes the current food supply ST regime; section 4 analyses the role of consumers in the

evolution of a ST regime; section 5 presents the results of a case study; section 6 describes how consumers innovation in the food supply has evolved over time through different phases.

2. The theoretical framework

In order to disclose the mechanisms fuelling the transition the theoretical framework is basically build on the transition studies and specifically on the multi-level perspective (MLP). The field has become more and more salient through a strongly increasing number of publications and special issues (for a review see Markard et al., 2012). The key element in the MLP is the ST regime (Geels, 2002) which consists of (networks of) actors (individuals, firms, and other organizations, collective actors) and institutions (societal and technical norms, regulations, standards of good practice), as well as material artefacts and knowledge (Geels, 2004; Markard, 2011; Markard et al., 2012). A ST transition can be explained as a non-linear process that results from the interplay between three analytical level: niches (the locus for radical innovations), ST regimes (the locus of established practices and associated rules that stabilize existing systems), and an exogenous ST landscape (Geels, 2002). The ST regime forms the “deep structure” that accounts for the stability of an existing ST system (Geels, 2004) and “it refers to the semi-coherent set of rules that orient and coordinate the activities of the social groups that reproduce the various elements of socio-technical systems” (Geels, 2011, p.27).

The MLP tell us much on innovation process within a ST regime but it has been criticized for its rather unspecific treatment of actors strategies (Genus et al., 2008; Markard et al., 2008) and it lacks on explaining how the internal organization of a ST regime changes over time. In order to deepen the process of exploration for new designs by consumers, the different innovation tracks and how they change the organization of a specific ST regime over time, we will refer to the literature on organization studies.

In the industrial organization studies the seminal work of Utterback and Abernathy on the dynamics of process and product innovation (1975) opened up the way for many scholars to develop an evolutionary perspective on how industrial organization changes over time in order to reveal the industry life cycle (Klepper, 1996) and the cluster life cycle (Malmberg and Maskell, 2002). In a life cycle perspective an industrial cluster evolves over time in four distinct phases: emergence or birth, growth, maturity and then a crisis that leads to a decline or a renewal. Malmberg and Maskell (2002) have summarized the typical development of a cluster: a single enterprise is located in a region (usually the place of residence of the entrepreneur); as the enterprise grows, spinoffs and imitators are founded in the local milieu (phase of emergence or birth); as Marshallian economies

set in, the cluster move on like a snowball and it grows and attracts more firms, capital and specialized labour; employment rises and local institutions develop to meet the needs of the growing cluster; and a distinct local industry culture develops (phase of growth and then maturity of the cluster); finally, new technological and market developments require the cluster to rapidly, often radically, restructure. At this point the cluster either reinvents itself, triggering a new growth phase; or it stagnates, eventually losing its competitive advantage.

The same theoretical path was elaborated in social organization studies with the seminal work of Post (1978) which offered positive insights for the development of an issue life cycle literature (Buchholz, 1988; Mahon and Waddock, 1992). In a life cycle perspective a public issue develop over time through different stage models as follows: the issues emerge in civil society and it is put forward by activists (or opinion leaders), then gain media attention and spill over to politics. Such issue can be resolved by being codified or institutionalized into regulations or code of practice (the legislative outcome) or by becoming norms and policies or they can fall into a public opinion black hole, possibly to rise again at a future date when new problems arise (Rivoli and Waddock, 2011). Both industrial and social organization studies offer positive insights for the comprehension of how consumers strategies can affect the organization of a ST regime over time.

3. The established food-supply as a socio-technical regime

The food supply can be conceptualized as a ST regime which is dominated by the large-scale retailer, a system for retail sale made through a network of supermarkets. From the historical point of view the supermarket was born in the United States, specifically in New York in 1930, and in the late Fifties was exported to the rest of the world. The great success of this type of distribution lies in the fact that it has fully satisfied the current needs of buyers, allowing them to find a wide variety of products at low prices, all in one place, saving time and money. Indeed the benefits that make the large-scale retail trade be preferred to other types of distribution are the facility, the speed, the convenience and the variety (Sbrana and Gandolfo, 2007). Due to deeply unequal bargaining positions of farmers and consumers on the one hand, and global food suppliers and retailers on the other hand, the latter can continue to have a dominant position in the regime so to be allowed to pay relatively low prices for crops even when the prices increase on regional or international markets, charging high prices to consumers even though prices fall on these markets. Being the most successful type of distribution, supermarkets hold a strong market power and global food companies are willing to do anything to make their products become part of the assortment. Therefore, on one hand, large-scale retail trade can get advantageous prices, definitely lower than those granted to

smaller types of distribution, and on the other hand the variety is guaranteed, since the industrial companies spontaneously offer a wide range of food products. The share of the top ten global food suppliers in the global market is 28 percent and the top five companies (Kraft, Nestlé, Unilever, PepsiCo Inc. and Coca Cola) account for 18 percent (Dalle Mulle et al., 2010). Alike, in 2011, the top 10 global retailers companies represented 29 percent of top 250 global retailers revenues (Deloitte, 2013).

The strong tie between the large-scale retailers and industrial food processing brands accounts for the stability of food supply regime over time. In a such stable situations, innovation is mainly of an incremental nature. Radical innovations, which are pioneered in niches, have a hard time to break out of the niche-level. If the regime is confronted with problems and tensions at the landscape level, than the linkages in the configuration become less tight and a change become possible (Geels, 2011). So we have to answer to the following questions: are there weak ties that may create pressure on the established food supply regime? Are there any open “windows of opportunity” for changes to emerge?

In order to lower the production costs as much as possible, the food processing companies are footloose and they can relocate across national borders in response to changing economic conditions, and in particular the price of raw materials. Thereby for consumers it is not possible to know the exact origin of the food they are buying because, although the final product may be processed at the national level, on the packaging there are no references regarding the origin of raw materials (crops and livestock). In order to supply thousands of stores worldwide, the production is meant to be standardized, holding in low esteem what are the geographical, linguistic and cultural differences between the consumers all over the world, and the quality of food as the sustainability of agri-processes take a back seat (Ilbery and Kneafsey, 2000). For this reason the processing industry is not as close to consumers as food retailers are and, thereby, adjustments are slower. Such adjustments are also more expensive, since consumers in different countries have different tastes, hampering the centralisation of production sought by corporations in order to realize economies of scale.

Furthermore, having the quantity as primarily objective, many companies are responsible of the over-exploitation of both human resources, sometimes making themselves guilty of violation of human rights, and natural resources, contributing significantly to pollution and despoliation of the environment (Marsden, 2003). For these reasons, in recent years there have been some manifestations of a growing dissatisfaction with this type of food supply network, linked to broader concerns that the current agro-industrial food system has not effectively provided a nutritious, sustainable and equitable supply of food to the world's population. Technological innovations have

provided cheap food to millions, but there are external costs of such a system in terms of soil and water depletion, food safety scares, animal welfare, declining rural communities, rising obesity and diet-related health problems, as well as growing food insecurity (Donald et al., 2010).

These dynamics were reinforced in the last three decades by several scandals in the food processing. We can remind here the case of BSE (Bovine Spongiform Encephalopathy), well known as “mad cow” disease that has killed 207 people in Europe in the last 25 years, the blue mozzarella in Italy, the killing milk in China, and so on. Also in these days a horsemeat scandal has spread across Europe, triggering alarms on food scrutiny and raising food security concerns in the continent. It follows that, due to a gradual process of change into the ST landscape the food supply regime is today under a growing pressure. The weak tie is the consumer satisfaction and the re-positioning of their purchase decisions might open a windows of opportunity for new designs at the niche level.

4. The emergence of new designs driven by consumers

Consumers have a leading role in every ST regime and with their purchase decisions they address the trajectories. At the same time consumers are limited in their choice by the potential offer in a specific market. In an evolutionary perspective, consumers stabilize the current regime as they tend to organize their purchases in a routinized way. They do so not only in an individual sense but also draw on experiences that have been gained by relatives, friends and neighbours (Truffer, 2003). Hence, a new and radically redesigned supply network has to face with the path dependency on the side of the consumer habit. New habit deals with new routines and new competence, which is to say a new design (Baldwin et al., 2006). Designing requires effort and a considerable degree of uncertainty when facing with a new option, hence new designs are costly. It follows that the costliness and uncertainty of new designs can be formalized by modelling the process of design as a search in an “unknown territory” (Nelson and Winter, 1977).

The growing dissatisfaction for the established food supply, dominated by the duopoly supermarket-global food supplier, has driven few pioneers to have an active role in breaking the taken-for-granted duopoly. These bioneers (Schaltegger, 2002) or users-innovators (Baldwin et al., 2006) tend to be moved by a strong ecologist issue in opposition to consumerism and growth and they search for a new design space, “the name given to the abstract territory in which design search takes place” (Baldwin et al., 2006, p. 7).

Within the food supply regime consumers as isolated individuals have a difficult time to find innovative solution whereas associations of consumers who engage in the development of alternatives could be an important force for redefining the current regime. Since Nineties, some

consumers have organized in informal network of consumers in order to search for new ties in the food supply. These informal networks started up with the aim of providing food to members from local and regional farmers. It follows that these new design of food provision were born in opposition to the current agri-food regime: standardized and specialized production processes responding to economic standards of efficiency and competitiveness on one hand; localized and small scale production processes attempting to trade on the basis of environmental, nutritional, or health qualities on the other.

Due to an alignment of interests between consumers and farmers, the latter in a deeply unequal bargaining positions faced to large-scale retailers, the initiative of informal networks of consumers was successful from the beginning. This new agreement between consumers and farmers filled the gap by production and consumption. This gap is responsible for the insecurity of food supply and then for the dissatisfaction of consumers in the established regime. These new informal networks of consumers shape differently worldwide and they are known as Community Supported Agriculture (CSA) in U.S., Canada and North Europe, TEI-KEI in Japan, Association pour le Maintien d'une Agriculture Paysanne (AMAP) in France, ConProBio in Switzerland, Grupos Autogestionados de Consumo (GAK) in Spain, Food Justice Movements and Food Policy Councils in U.S. and Canada, NyKA in Hungary and Gruppi di Acquisto Solidale (GAS) in Italy. They operate at the niche level and since Nineties they are experimenting an innovative organization in the food supply regime.

To point out this innovative process of "bottom-up" innovation into the food supply regime, a case study is presented. The case of Italy illustrates several important consumer-related aspects of innovations and their influence on the established regime. In order to disclose the mechanisms moving forward the process of change in the food supply network, a number of questionnaires was submitted to informal network of consumers.

5. The case of Italy: some descriptive analysis

In Italy the informal group of consumers are well known as GAS which is an acronym for the Italian expression "Gruppi di Acquisto Solidale" (solidarity based purchasing groups). Usually, a purchasing group is an informal network of consumers set up by a number of members who cooperate in order to buy food and other commonly used goods directly from the producers.

A GAS selects products and producers on the basis of respect for the environment and the solidarity between the members of the group, the traders, and the producers. Specifically, these guidelines lead to the choice of local products (in order to have a direct relation with producers), fair-trade goods (in order to respect disadvantaged producers by promoting their human rights, in particular

women's, children's and indigenous people's) and reusable or eco-compatible goods (to promote a sustainable lifestyle). The first GAS was established in Ferrara in 1994. Unfortunately doesn't exist yet an official census of GASes and nowadays the only data base is the volunteer list registered on the official website of the Italian Network of GASes (www.retegas.org). The list is not complete as many GASes are not registered.

Since 1994 GASes are increased dramatically and today the list includes 954 of them. In order to disclose their internal organisation we have submitted a questionnaire to all of them with a response rate of 40 percent. The results are presented divided by the five questions proposed in the questionnaire. The answers to the fifth question (Past trajectories and future development of GAS) have been used to trace the development path of this innovation driven by consumers (section 6).

Answers to the question 1: Who and how many are the members?

The range of members participating to a GAS is between 20 and 180. Every member corresponds either to a family or a group of friends or neighbours that decide to purchase together. The GASes were founded either by families in the same neighbourhood or by pre-existing group of citizens (sport and cultural associations, parish, employees of medium and big companies). They may have a weekly or monthly meeting although the organisation is totally structured by information technologies. Usually every member is charged by collecting orders and money for a single product and than send it to the supplier. Deliveries may happen either in his house or in a prearranged place.

Answers to the question 2: Which is the origin of your purchases?

All the GASes answered that they put first local producers because they want to have a direct relation with producer in order to be guaranteed on the quality of the food. Furthermore they are glad to support the diffusion of local products coming from farms and enterprises that operate legally, respecting workers and environment. So the GAS can support small and local firms which are suffering the pricing policy set by large retailers. In the case that some products are not available locally, they are purchased either at the regional or national level.

Moreover, those who participate in a GAS feel the need to confront each other, exchanging the information collected individually. It follows that these people are always looking for opportunities to learn, to improve their awareness and thus be able to manage their consumer power to the fullest. For these reasons, GAS organizes and promotes also visits to the local producers, briefings, laboratories, workshop, conference, etc.

From the questionnaires it emerges that the origin of purchases is:

- Local (30-60 per cent of total purchases): vegetable, meat, milk, honey, bread, eggs, fruits;

- Regional (20-50 per cent): fish, cheese, rice, pasta, olive oil, wine;
- National (10-30 per cent): orange, labelled product like parmesan cheese, aceto balsamico;
- International (0-5 per cent): only fair trade products such as coffee, sugar, cocoa.

Answers to the question 3: Which is the type of cultivation of suppliers (organic or not organic)?

Among all suppliers the range of organic producers swings from a minimum of 80 up to 100 per cent. GAS members have expectations about the quality of food and they prefer organic farmers. They believed that organic products are healthier and more sustainable for the land. Ironically, as they purchase directly to the farm, the price of organic food may be the same of the industrial processed available in the supermarkets. Due to high cost of certification processes, it emerges that 40 per cent of suppliers is not certified as organic farm, although they operate as a certified one.

Answers to the question 4: How much is the annual turnover generated by a GAS?

The turnover varies depending on the number of members of a GAS. From the questionnaires emerges a range between 20.000 and 400.000 euro per year.

6. The role of consumers along the sustainable food supply issue life cycle

The issue for a sustainable food supply is putting under pressure the ST regime which is then undergoing a process of change. We have argued that in the food supply ST regime the consumers are having a leading role in the transition. In order to trace how consumers innovation in the food supply may evolve over time we propose here a model. It consists of four different phases drawn on the answers to the fifth question in the questionnaire (Past trajectories and future development of GAS).

Phase 1: The opening of a new design

Every environmental issue emerge in response to some critical events. Before little attention is being paid to the issue, and only few activists begin their movement, starting up the process of raising awareness about the issue among other early followers (Rivoli and Waddock, 2001).

The awareness about the risks of a massive use of chemical products in agriculture was developed since after the second world war. For instance organic farming has its roots with the ideas of scientists such as Rudolph Steiner, J.I. Rodale, Lady Eve Balfour, Sir Albert Howard and other scientists beginning from the 1930s. Furthermore in 1962, science writer Rachel Carson published "Silent Spring", a book where she criticised the indiscriminate use of chemical pesticides, fertilizers

and weed killers. The book title refers to the ultimate disappearance of songbirds because of the effects of DDT (Dichloro Diphenyl Trichloroethane) a pesticide widely used from 1939 to 1972.

Beside that other movements around the world have increased the food culture around the world. For example the Slow Food association that was founded in Italy in 1986 to counter the rise of fast food and fast life, the disappearance of local food traditions and people's dwindling interest in the food they eat, where it comes from, how it tastes and how our food choices affect the rest of the world. Slow Food is today a global, grassroots organization with supporters in 150 countries around the world who are linking the pleasure of good food with a commitment to their community and the environment.

Anyhow, the trigger event that drew public attention to the sustainable food supply issue happened in 1986 when the first case of BSE (Bovine Spongiform Encephalopathy), a chronic, degenerative and irreversible neurological disease that affects cattle, was identified in the United Kingdom. Three years later, in 1989, American researchers announced that Alar or diaminozide, a ripening agent commonly used in apples, was found to have caused tumours in lab animals and was a potential carcinogen. Scandals like these, combined with recent media attention on pesticides, fuelled a surge in demand for healthy and secure food.

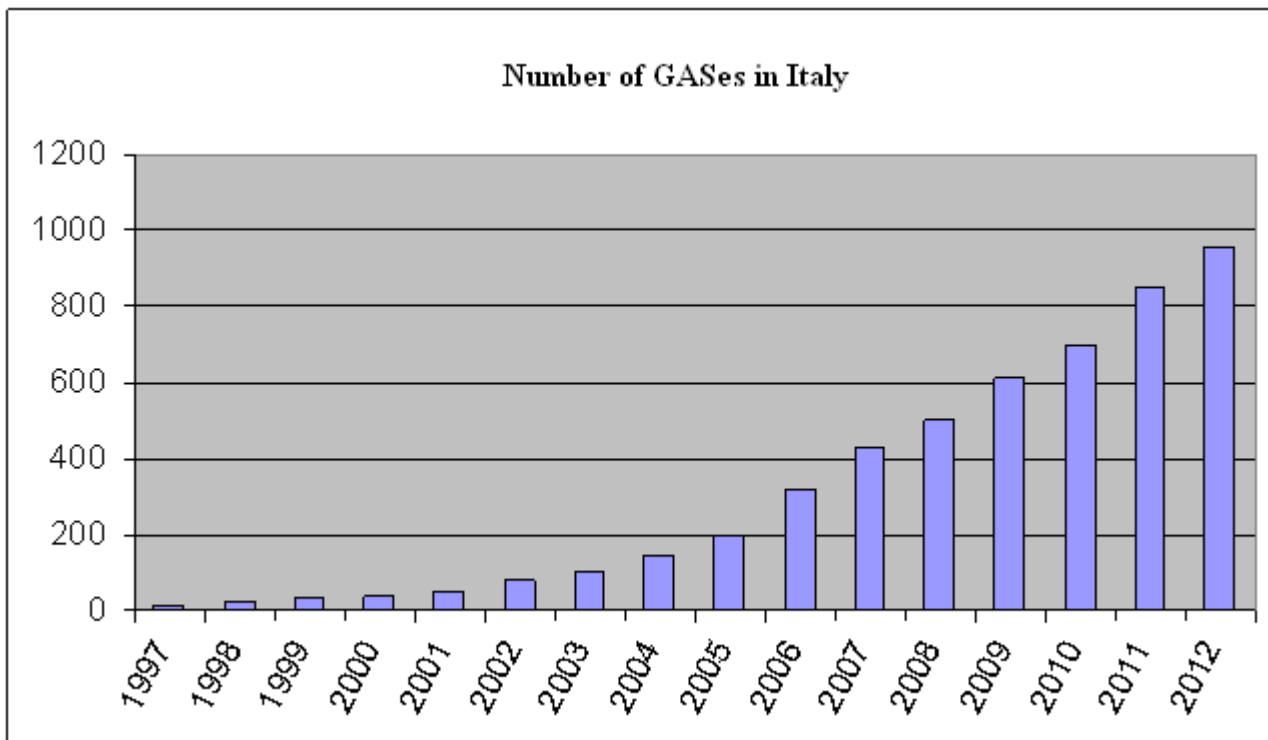
It is then in Eighties that the sustainable food supply issue emerged and some pioneers started to search for new designs in the food supply. The consumers were motivated to search for new designs because they believed that they can enhance their needs, which is to say to provide healthy and traceable food supporting the local community. Thus no one had to pay consumers to search for new designs (Baldwin et al., 2006). In this first phase the pressure from the landscape to the established ST regime is not heavy yet and the sustainable food supply issue may be ignored by incumbent firms such as large retailers and food processing companies.

At the end of this preliminary phase, as a result of the searching activity, a new design is open. When a new design is "discover" is often a datable event. In the case of food supply in Italy the first GAS was founded in 1994 in Ferrara (Emilia-Romagna region). As in many other cases (von Hippel et al., 2011), also in the case of GAS, consumers innovators trigger the opening by doing something in a new way. The GAS members decided to provide food out of supermarkets, referring to the local farmers. It follows that before the opening of the GAS they explore the possibility getting in touch with many as possible local farmers, which were not satisfied by the bargain they had with large retailers.

Phase 2: The growth stage

An important property of designs is *non-rivalry*. The use of a design by one group of consumers does not preclude another from using it too. Thus designs cannot be “consumed” in the sense of being “used up” (Baldwin et al., 2006). As a consequence the GAS design was replicated by other group of consumers widespread in Italy (see fig. 1).

Fig. 1 The growth of GASes in Italy



Source: www.retegas.org

The take off happened from 2004 and it is due to the transition from isolated consumers innovators to a community of consumers who freely exchange information on their design. Free revealing of new designs has been observed also in other communities such as sport communities (Franke and Shah, 2003), open source development communities (Henkel, 2005) and rodeo kayaking communities (Hienerth, 2006; Baldwin et al., 2006). In the case of consumers in Italy, communication and free revealing are achieved with a plethora of events and via a national web site with all information concerning the new design. Free revealing produces external economies in the sense that it is less costly to establish a GAS. It follows a “snowball process” (Malmberg and Maskell, 2002) generated by spinoffs and imitations. In the case of GASes the “spinoff process” is due to the fact that when a GAS become to large (30-40 members) it may happen that few members, together with new comers, create a new GAS. At the same time the imitation process was

supported by the blooming of lists of local farmers interacting with GASes and web site revealing how to found a new GAS.

As a GAS requires both a change in the routine of purchasing and networking with other consumers, which is costly in terms of time, the new design will be rejected by many consumers. To meet their needs, in the last few years in many Italian cities (e.g. Turin, Milan, Rome, Florence) were born several web sites where it is possible to order on line a personal basket of products. Usually the local farmers supplying the shopping on line are the same interacting with GASes so this new design differs from the GAS only because is provided by entrepreneurs. These entrepreneurs or consumers-purchaser (Baldwin et al., 2006) are members of the same community of like-minded innovators and they benefit by freely revealing their design. On their web sites the cost of food is higher as it is a business as usual.

In this phase the incumbent firms, particularly the large retailers, start to feel the pressure so they introduce few incremental change. They increase the offer of local foods and that of labelled products such as organic food and fair trade. In some cases supermarkets may be interested in less ambitious sustainability standards compared to those provided by the GAS. For instance, in the debate about Switzerland's "agricultural policy 2002" in the early 1990s, "the country's leading retailer Migros actively lobbied for Integrated Pest Management (IP) rather than the stricter guidelines of organic agriculture as the standard that would be the base for environmental subsidies to farmers" (Hockerts et al., 2010, p. 488)

Phase 3: Co-evolution of incumbent firms and new designer

After a long period of growth and internal improvements the GASes are facing the possibility to emerge from the niche level and become a stable actors of the ST regime. This phase is now in Italy at a preliminary stage.

The majority of GASes answered that they will not move further the original design and they will continue to be an informal group of consumers purchasing food together. They don't want to grow beyond a small niche as they are moved by a strong idealistic vision. However, in a few cases they answered differently, coming to envisioning a development track. Few GASes, usually those with a high number of members (80 up to 180), after the second phase have evolved into a registered non-profit association with a web site, a bank account and a legal entity. In order to organize deliveries and weekly meetings, to meet local producers and to organize events and laboratories, some of them have established a geographical location. These GASes are opening to non-founder members, *de facto* acting as a shop or through a web site (shopping on line). In some cities this developing track is the result of a process of networking in the sense that a certain number of GASes established a

network of them, so to move beyond a minimal threshold. It follows that they do not share the implicit motto of many GASes that to stay “pure and small is beautiful”. Instead they have also a clearer expectation to achieve profitable growth and to extend market share, while defending it against incumbents (Hockerts et al., 2010). Onward in the development track, some GASes may evolve into big shops providing local and regional food, fair trade products. This development track has already happened in Italy, as in other European countries (e.g. Switzerland and Austria) and some cooperative of consumers (well known with the brand COOP) have evolved into large retailers operating at the national level.

In order to support the process of GAS formation, some regions in Italy (e.g. Puglia, Calabria, Umbria) enacted a specific law. GASes then can have access to funds in order to support the start up phase and cover partially the initial investments such as a web site, a management software or the organization of education events.

In this phase the incumbent firms, due to the growing pressures from the landscape and the success of evolving GASes, may reduce the space for global food supplier so to offer a large variety of local and regional food. It follows that some members may exit from the GAS as they can find quality food in the supermarket. On one hand, this clearly contributes positively to the sustainability transformation of a regime, because it improves access to products of higher social and environmental quality to a wider part of the market, and is likely to reduce other sustainability impacts through process innovation along the way. On the other hand, the entrance of cost-conscious large-retailers increases the pressure to somewhat lower sustainability criteria and to give up some of the ideals cherished by the first generation of consumer innovators (Lockie, 2008). So to some extent, the price of gaining more breadth may be to lose depth in terms of sustainability quality. At this stage of development, we can expect the re-emergence of informal groups of consumers (phase 4) in order to create new market niches, eventually triggering for the beginning of a new cycle again (Rivoli and Waddock, 2011).

Conclusions

The emergence of the issue for a sustainable food supply goes beyond the simple preservation of environmental resources, and it allows to spotlight some issues like food safety, obesity epidemic and culinary and aesthetic value of food, as well as the social and environmental externalities associated with the conventional food chain. Thus, the consumers demand about the food they buy have increased: the attention is no longer just on the organoleptic properties of commodities, but buyers are looking at the origin, the production process, the working conditions, the use of chemical

components and the public reputation of the producer and so on. Furthermore, due to various scandals and events triggering uncertainty on food provided by supermarkets, this process of transition towards a more sustainable food supply has speed up in the last few years.

Transition studies so far has neglected the role of consumers in transforming ST regimes towards sustainable development. This paper argue that an innovation driven by consumers is possible. In the case of food supply, after a period of search by some pioneering consumers, new designs have emerged from the niche level. In the case of Italy, consumers have organized in informal groups (GAS), in order to purchase together their food.

The key mechanism hindering a transition driven by consumers is networking as there are large benefits to having a free-revealing community. It follows that “any scale of community is more efficient than design search by innovators acting in isolation” (Baldwin et al., 2006, p. 21). The benefits of a networked community of consumers hinge on the non-rival property of design and it is supported by a large use of information technologies and internet.

In order to trace the evolution of an innovation driven by consumers, in this paper we have proposed a model. It consists of four different phases on an evolutionary track in which the innovation emerges from the niche level, reinforce over time due to imitations and a typical “snowball process” (Klepper, 2010), and eventually breakthrough putting under pressure the incumbent firms in the established ST regime. Although the events described in our model do not have to happen in the same order, today in Italy some GASes are moving onward the initial design and they are transforming into formal networks acting as a retailer. At the same time supermarkets are increasing their offer of organic local food, although they may be interested in less ambitious sustainability standards compared to those provided by the GASes. Therefore, we would argue that the sustainable transformation of regimes such as food supply is not going to be brought about by either consumers or incumbent firms alone, but instead that their interaction and co-evolution is essential.

Our conceptual model points to interesting issues for further research. It is clear that transition research should move beyond the single case study designs in order to gain additional insights from comparative studies of innovation both driven by consumers and incumbent firms. In such studies, it would be particularly interesting to watch out for the specific challenges encountered by consumers and firms in their attempts to broaden and deepen the level of their impact. Our model of innovation driven by consumers may be quite generally applicable to fields and ST regime where consumers are an important source of innovation.

Our model has important policy implications. The findings discussed in this paper suggest that what is needed is to discard the Schumpeterian idea of product innovation (1934), as a producer activity,

so to include consumers among subjects of innovation policies towards sustainability. Achieving the sustainable transformation of a ST regime requires a fine tuned mix of innovations, which can be promoted if policymakers understand the nuanced interplay of consumers and incumbent firms, rather than single-mindedly focusing on only one of these paths while neglecting the other. In conclusion this paper would suggest that smart innovation policies should try to leverage cooperation and co-evolution between consumers and firms.

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