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Institutions, Firms and Consumers' Choice: Extending Neoschumpeterian Competition to Consumption

Felipe ALMEIDA* and Huascar PESSALI**

* Federal University of Pampa, Rua Barão do Triunfo, 1048, Santana do Livramento, RS, CEP: 97573-590, Brazil.

E-mail: jfelipealmeida@hotmail.com

** Economics Department of the Federal University of Paraná, Av. Prefeito Lothário Meissner, 632-térreo, Curitiba, PR, CEP: 80210-170, Brazil.

Abstract

The notion of neoschumpeterian competition can be combined to insights from institutional economics in order to help explain consumers' decision-making. Competition is a selective process whereby firms are led to create, re-shape or increase advantages toward other firms in a market—a loosely organized set of institutions with a large number of selective exchange goods. In a complex consumption environment, those institutions simplify, codify, and transmit information to consumers that use particular cognitive abilities and habits of thought to interpret it and thus make reasonable choices. In this view, firms' competitive advantages intertwine with market institutions. A firm promotes “upward causation” when it moulds such interaction to its favor, promoting changes in consumers' desires, goals, and preferences. Hence, innovation in the form of a new product in the market is just part of a bigger process in which consumers' perceptions and preferences concerning the usefulness and representation of products are also essential.

Keywords: competition, institutions, consumption, Joseph A. Schumpeter, institutional economics.

Introduction

Studies of firms and industries make regular use of the notion of neoschumpeterian competition—a supply side application. As argued here, the notion can also be fruitfully applied to study important elements of consumers' behavior—a demand side application. This is attempted here through linking theoretical elements of neoschumpeterian approaches and insights from institutional economics.

The neoschumpeterian concept of competition is based on Schumpeter's idea of creative destruction processes breaking out of the circular flow and crafting winners and

losers. Competing firms try to create, modify or increase their competitive advantages by introducing innovations in a market. Institutional economics, as inspired by Thorstein Veblen and John R. Commons, is known for its emphasis on the role of institutions in crafting economic life. Institutional economists tend to highlight how our behavior relies on instincts and habits, and are influenced by heterogeneous cognitive processes. They are the building blocks of individual and collective rationalities, and thus of decision-making in all spheres of life.

The notion of neoschumpeterian competition can be combined with institutionalists' insights about individual behavior (especially in the role of a consumer) and its relation with firms' actions. The argument is developed along five sections. Section 1 works out further details on neoschumpeterian competition related to firms' behavior, markets, technology and innovation. Section 2 presents some selected insights from Institutional Economics to be used in Section 3, which elaborates a working definition of institutions, brings back neoschumpeterian competition, and applies the related insights to the consumer's behavior. Section 4 discusses the use of these insights in empirical studies. Section 5 closes the essay with some final comments.

1. Neoschumpeterian Competition

Joseph A. Schumpeter contributed to the unfolding of many research areas of Economics. Microeconomics is one of them. Many authors argue that he was the first economist to develop an evolutionary approach to the firm. For Schumpeter (1911, 1942) innovation is seen as the key variable to the success of an enterprise. In pursuing and achieving innovation, entrepreneurs and firms change the environment that pushed them into pursuing it in the first place. The dynamics of irreversible changes characterizes the Schumpeterian approach as evolutionary.

Schumpeter (1911) analyzed the entrepreneur as the main agent of innovation. Firms are the most important place on which the entrepreneur bases his action, promoting innovation, adapting to changes brought about by someone else's innovation, or succumbing to them. Later on, Schumpeter (1942) changed his focus: the central point still is innovation, but the modern firm and its R&D department became the main agent of innovation (Nelson, 1991). He established what would become a theoretical icon for future research: the importance of technology for innovation. As a result, many neoschumpeterian approaches put technology as the central object for analysis.

1.1 Competition by technology

Taking competition into account in the neoschumpeterian approach, firms consciously

search for competitive advantages through differentiation of products and processes. They are decision makers constantly searching for changes that may improve their current standings, which translate into bigger profits, better growth conditions, and a renewed competitive environment. In this dispute, it is difficult to know *a priori* what exactly an advantage is. Any attempt to anticipate it requires an image of the market environment, and the establishment of competitive advantages by firms changes the market as it affects the forces of selection. In neoschumpeterian competition, a circular agency-structure relationship takes place: the working-rules of the market affect the innovative efforts by firms, and by innovating successfully firms change the working-rules of the market.

Accordingly, a neoschumpeterian definition of a market is what firms think to be the *locus* on which they can establish competitive advantages. Notice that their image is subject to unremitting change in response to both a changing environment and a firm's own intentions at innovation.¹⁾ Possas (1985) and Possas (1999, 2006) argue that the definition of markets relates mainly to demand and technology aspects. Indeed, technology has been a key object of neoschumpeterian studies, as in Nelson and Winter (1982), Dosi (1982), Rosenberg (1982), Nelson (1996) and so many others. Other socioeconomic factors that also influence the vision of the firm (e.g., culture, habits, conventions, social values, history, and other institutions), however, have not had so much attention from economists (Possas, 1999).

In its strategic moves, a firm tries to take into account all resources at play in a market. Some are mostly under its control—the technology it uses, its managerial body and communication channels—whilst others are not. The technology developed by other firms or entities, and the way they try to differentiate themselves are also competitive elements that affect the environment. Consequently, the appropriation of a public technology or the imitation of a private one are possibilities of a competitive strategy. A successful innovation strategy, thus, will change not only a product or a production technique; it will modify the market as the competition environment.

Although not fully predictable, innovation is neither random nor remote from social settings. It usually results from a firm's effort in the battle for more competitive power. According to Schumpeter (1950), it corresponds to a process of creative destruction that produces new goods, new technologies, new supply sources, new communication and

¹⁾ Penrose (1995) developed the notion of the image of the firm. Penrose argued that firms' productive resources would be applied according to the entrepreneur's perception of the environment, an image built upon his experience and versatility. See also Boulding (1956).

marketing channels, and so on. Novelty replaces a previous novelty, and is bound to be replaced. Creative destruction promotes new winners and losers, but *a priori* knowledge of who is who is hard to obtain. In other words, whether an innovative strategy will work or not is hard for a firm to know. Companies act on what they think the better chances are for them to build competition advantages. They rely on an image of their context, especially in directing their efforts to innovating. As innovations change the market, images have to be reviewed. As a result, old possibilities for innovation are discarded and new ones are construed. But changes may be subject to path dependence governing both technology and firms' images and actions.²⁾

Some firms in a market may be inventive, but some of their invents may not make it to the market because of technical aspects, market regulation, failure to gain consumers acceptance, quicker moves on competing technologies, and so on. If a firm succeeds in taking its invention to the market, it has an opportunity to recover the costs of innovating. The other attempting firms will face sunk costs and no revenue. It thus makes sense to some firms not to put their technological efforts in being a first-mover. This does not mean giving up on competing—there are other strategies available, as imitation or emulation. Creative destruction through technological innovation is just one possibility in a wider range of competitive strategies. There are cases in which imitating proves better than innovating, but profits in innovating must exist at some rate in order to feed firms with expectations of future profits in innovating. This is what Schumpeter (1911, 1942) called “appropriability advantages”, and neoschumpeterians have shortened to “appropriability”.

Neoschumpeterians have separated the factors that encourage the firm to act as an innovator in three different concepts: appropriability, cumulativeness, and opportunity. The first is the capacity of the innovator to get hold of extraordinary profits, the existence of which is essential for innovation to occur. The appropriability efficiency is directly related to obtaining high innovator profits, giving a firm a better potential to grow, accumulate, and keep innovating. Cumulativeness occurs when a previous innovation generates further innovations. In this case a first-mover may be in better position to innovate on top of previous innovation by drawing on its more extensive knowledge. Opportunity is related to events in the market that make previous innovations open for further innovations (Dosi, 1988; Pissas, 1999).

The role of technology towards innovation in modern economies is fully recognized

²⁾ See Dosi (1982), Rosenberg (1982), and Rizzello (1997) for further details on path dependence.

here, as established in the neoschumpeterian view of the dynamics of capitalism. We propose, however, that technology alone may not amount to an innovation in its full sense, *i.e.* as an exchangeable invention. There is more to how an invention becomes exchangeable.

2. Institutional Economics

Institutional Economics emerged at the turn of the 20th century with the works of Thorstein Veblen and John R. Commons, among others, and lives on by the work of many other scholars. This section, thus, tries to highlight some useful insights from the field of institutional economics so that Section 3 can offer a notion of institution that is apt to studying the interaction between firms and consumers in a context of neoschumpeterian competition.

2.1 Defining institutions

Geoffrey Hodgson (2003, 2006, 2007) defines institutions as systems established and embedded in social rules that structure collective interaction, or additionally that institutions are sets of durable social rules well accepted by individuals. Language, money, law, and firms are examples of institutions, and their stability comes partially from their capacity to generate stable expectations by imposing form and consistency to human activities.

Those rules become immersed into society partly because people choose to follow them repeatedly. Stein (1997) argues that an institution is a socially built conviction system about how things are and how things should be. In doing so, institutions help us organize thought and action. Dugger (1980) emphasizes that an institution represents standardized habits of thought learned through the individual performance of rule-following actions. Although conditioned by and dependent on individuals and their habits, institutions do not consist only of them. They are simultaneously objective structures external to individuals, sometimes with a physical instance, and subjective structures into their minds. Individuals and structures, although distinct, are connected in a cycle of mutual and interdependent interaction (Hodgson, 2003). As a result, institutions are intersubjectively shared by a collectivity of individuals, even if unconsciously. Furfeld (1989) derives from it the idea that individual choice has a social nature for it is made according to social experiences and interaction that compose the learning process in the daily life of individuals. Both Commons (1931) and Hodgson (2006) recognize that rules have a restrictive nature too. Assuming that there is learning, however, makes it easier to see that limits can in fact be informative of unknown

possibilities. They can thus lead to choices, promote actions, and enable behavior.

2.2 Cognition, habits, and reconstitution

In a complex and information rich world, institutions absorb, filter, simplify, and transmit information to decision-making individuals. Melody (1987) argues that institutions are defined according to their ability to mold information that people, or other institutions, capture and apply in their decision-making. As information sharing channels, institutions eventually promote interaction standards, shape communication and knowledge construction. Individuals need to make sense of the information transmitted by institutions (Cosgel, 1997; Klamer and McCloskey, 1988; Hodgson, 1985, 1988). This is the task of individual cognitive capacities, a set of internally held (though changeable) concepts and decision-making criteria. For a socialized individual, concepts and perceptive imprints are expressed in a social language, which gives cultural specificities to cognition. An individual's conceptual framework reflects her culture and, thus, the social rules therein.

According to Melody (1987), the effectiveness of information transmission is essential for a society to function. The impact of communication will vary according to a person's connections with others (her network) and the intensity of their ties (Granovetter, 1973). According to Hodgson (2006), how individuals understand the rules and choose to follow them relate not just to environment incentives and interpretation but also to the validation of institutions, which is inevitably a social process. The environment will affect the weaving of information pieces and the validation promoted by individuals to the habits and conventions they absorb from others. As such, it will also impact on the modes of individual decoding of new information (Loasby, 2001).

Hodgson (1998) argues that institutions perform a key role in providing a cognition structure for interpretation. At the same time, however, interpretation is not possible without prior habits of thoughts. The formation of habits of thought is part of our cognitive abilities, and is sparkled very early in life. Our first abilities are learned and then stored partly in our habits. Habits preserve knowledge, particularly of the tacit kind related to those abilities.

Veblen (1899, 1919a) was a pioneer in systematically working out the role of habits in economic behavior. According to the Veblenian tradition, habits are regular propensities to behavior and, as behavioral drives, have a role in economic decisions. Habit acquisition reflects our learning capacities and our actions in a complex and uncertain environment. We are exposed to growing flows of information and need to deal with them with our mental tools. Facts hit us as a bunch of information and we use our

cognitive capacities, built and re-built through our previous experiences and interactions, to make sense of them.

Habits can be acquired in many ways. Some come about from an initial deliberation, others from instinctive reaction or emulation. Whatever its origin, a habit is normally a proclivity to act or think removed from the sphere of continuous deliberation. Hence, habits can be understood as the automatization of a line of reasoning or a practice (Hodgson, 1988). Repetition is a key manifestation of habit formation, usually sparked by a stimulus or a context (Hodgson, 2003). Even for a habitual behavior or thought, however, incentives are important. After all, habits are propensities, not mechanical responses or locks to reason. Individuals can choose a non-habitual behavior, but this usually happens when they have a different interpretation of a context (Langlois and Cosgel, 1998). The formation of collective habits is the final product of a collective learning (Redmond, 2006).

According to Hodgson (2003), institutions can be seen as collective habits of thought or action that help shape our dispositions and aspirations through a reconstitutive process. They influence personal desires and actions through the quality of information they propagate, including social judgments about compliant or deviant acts. As individuals choose to follow an institutional standard, they reinforce and perpetuate that standard. According to Hodgson (2003), the socioeconomic system creates not just new goods and perspectives: individuals themselves are also reinvented. Learning through and abiding by institutional standards make people not only renew their abilities, perceptions and needs; purposes and preferences change in the process too (Hodgson, 2003, 2007).

Learning is a potential outcome of the discovery, creation or reception of information, meaning that individual capacities and preferences might have been reconstituted in the process. Learning is not only information acquisition in a quantitative sense, but also a qualitative check on established knowledge; it is thus a key source of individual reconstitution (Hodgson, 2003). Established habits of thought recombine old and new inputs and, as they go, may change our cognitive capacities. By checking our established frames of thoughts, we may end up reviewing our images and preferences, a process identified as reconstitutive downward causation (Hodgson, 2002).

Causality, however, is not always downward from institutions do individuals. Lower levels of social interaction can also promote changes upward onto higher levels, a process identified as upward causation (Hodgson, 2002, 2003). Dugger (1980) suggests, for instance, that institutions themselves may be a legitimate source of power to certain

groups or individuals. Individuals in turn may exert such power to change an institutional structure according to specific ideas or goals (not necessarily to their exclusive benefit). This power can also be understood as a force that works on our intentions (Searle, 2005). Our habits and cognition capacities give room to actions that, in one way or another, favor certain interests (Stein, 1997). Intentionality represents mental features that drive our thoughts and actions towards a certain desired effect on an object or states of the world. In this sense, beliefs, hopes, fears and motivations can be intentional (Searle, 2005).

3. Neoschumpeterian Competition and Institutional Economics: Consumers, Firms and Markets

This section brings together the ideas shown above in Sections 1 and 2. The neoschumpeterian views on competition and the institutional aspects of individual decision-making are worked out towards a broader conception of consumers' and entrepreneurs' behavior in market interactions.³⁾ The main question is: how can the decision-maker in a (neoschumpeterian) competitive environment and the "institutional person" be related? We offer three entry points for consideration: cognitive boundaries, sociability, and historicity of decisions.

The cognitive boundaries issue had a big push in decision-making studies with Herbert Simon's works, and especially through his notion of bounded rationality. For Simon (1957), rationality concerns a decision process in which preferred alternatives are chosen according to a system of values and to the measurable results of a set of known choices. The notion of bounded rationality describes how these decisions are made when the results of choices can be only vaguely known because of human limits to information processing, measurement restrictions, environment uncertainty and/or difficulties in comparing different alternatives (Simon, 1978).

In the neoschumpeterian competitive environment, the firm pursues competitive advantages that may change the context and the structure to its favor. The environment is only partially known and uncertain, and competitors in general act according to a vision they have about the market. In principle, thus, it is perfectly reasonable to attribute bounded rationality to the neoschumpeterian individual. Yet, this may suggest that our theoretical delineation of the individual is still bounded to purely conscious, isolated, and calculative behavior (Hodgson, 1985; Dequech, 2001). When competitors take their

³⁾ Firms and entrepreneur will be referred to interchangeably, as in Penrose (1995).

decisions, they rely on an image produced by their cognitive capacities and, thus, processed through their habits of thought. In addition, as argued above, habits of thought are intersubjective entities, shared by collectives through institutions (though not determined by them). In a neoschumpeterian-institutional logic, individual choices are thus socially built.

Consider for instance what Schumpeter noticed—that R&D departments have become major innovators. Individuals in R&D departments have to make choices in a social context. Sometimes Universities or independent laboratories are sources of invention and need to coordinate efforts and knowledge with other agents in an industry. Decisions are intertwined vertically and horizontally, and involve synchronizing images. Part of all these issues are dealt with through the formation of a collective habit called routine (Nelson and Winter, 1982). A routine legitimates a form of reasoning and gives the decision-maker a sense of control over complexity and ignorance about the environment (Loasby, 1976). For rational purposes, this social aspect represents a simplification of the environment (Callon, 1998; Hodgson, 1998; Strum and Latour, 2003) that can be called the image of the decision-maker (Boulding, 1956).

The entrepreneur's image is built on her interaction with the market, represented in the neoschumpeterian scheme by demand and production technology. Let us lay over this a definition of markets as a loosely organized set of institutions that shape exchanges. These institutions are habits (of action and thought) and rules (formal or informal) that generate foreseeable regularities of social behavior, molding and being molded by individuals as they interact. Different entrepreneurs acting in the same market will rarely share the same image of it despite the regularities provided by prevailing institutions.⁴⁾ As far as decision-making is concerned, the market is a personal concept built on the history and the strategies of each firm. If their strategies change, their images change too and the market institutions—which are valued in the decision-making process—are next in line. Market boundaries and evolution are defined both in actual technology and exchange patterns (and their supporting collective habits), and in the intersubjective images formed in the mind of entrepreneurs. These images guarantee “instable stability”—an oxymoron for, on the one hand, the pursuit of innovations that settle the market in favor of a firm, and on the other hand the other firms' pursuit of competitive advantages through innovation and creation of new habits in the market that reshuffle

⁴⁾ This does not exclude the possibility of a prevailing habit of abandoning one's own view to act in accordance to someone else's view, as in herd behavior or leader following practices.

positions in their favor.

The creation of new habits in the market leads one to think about the image of those on the other end— consumers. Economic approaches to consumer behavior, though, tend to ignore how consumers form their rationalities, preferences and choices. Institutional economists are among the few who have studied consumer behavior with greater breadth. Veblen (1899), for instance, stressed the emulative aspects of conspicuous consumption— people buy goods and services in search for social status. Douglas and Isherwood (1996) looked for a complementary analysis between economics and anthropology, also emphasizing social elements in consumer behavior. Cosgel (1997) and Langlois and Cosgel (1998) highlighted the role of economic institutions, habits and cognition in personal consumption. Wilfred Dolfsma (2002, 2004) worked on a case study about the influence of institutions over pop music consumption. Others have argued more broadly that habits are crucial in determining consumer behavior (Hodgson, 1988; Rook, 1985).

As highlighted above, in an institutional approach, consumers also make decisions under the influence of institutions. Through a reconstitutive downward causation process, institutions help consumers learn about the market, and build their preferences and decision-making as they provide not only information but also models of reasoning collectively legitimated that affect consumers' cognition capacities and habits of thought. Consider the social group, one of the key institutions in the analysis of consumer behavior. Social groups are sets of individuals who interact over time, sharing needs, interests and goals. Consumers take social groups as a guide for action and for tuning beliefs and values. They end up creating a kind of "behavior recipe" that exerts persuasive pressure on individuals towards having relatively homogeneous lifestyles. They also function as a psychological mechanism of integration (Redmond, 2006). Veblen's leisure class (Veblen, 1899) and the family (Dugger, 1980) are examples of social groups that influence individuals' consumption choices.

Individuals, however, need not belong to a group to be under its influence. According to the Veblenian tradition, the central issue concerning consumption is that people buy conspicuously, an institution in which standards of other consumers' behavior are emulated. In Veblen's logic, a higher social class establishes a lifestyle that serves as a reference to, and becomes desired by, others social classes. He called it conspicuous consumption; in modern societies, people buy things for the status they bestow. Living in society, individuals learn what to consume by observing what others consume and the respective status with which they are then endowed. Hence, the point is who the product

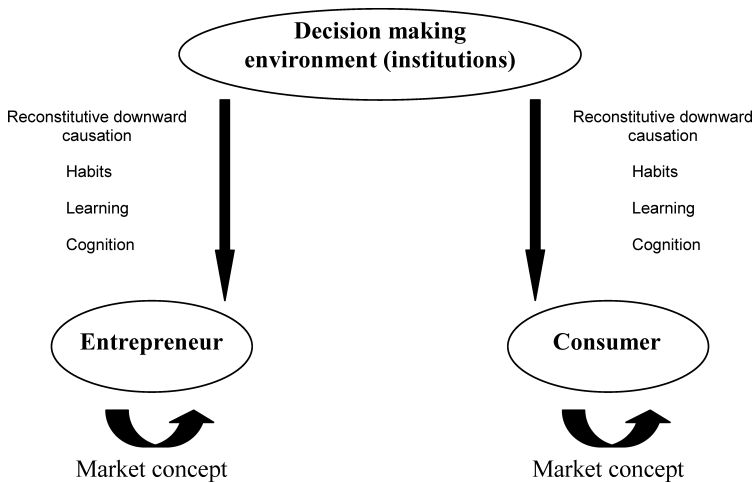


Fig. 1. The social aspects of consumers' and entrepreneurs' decision making process.

makes her to be after considering other people's valuations and preferences.

Individuals worry about their place in society and, accordingly, look for goods that provide collective status. Goods associated with high society become desirable, whilst goods associated with low classes become avoidable. A downward causation process operates and suggests a way to think and behave. This kind of relation motivates consumers to develop or refine a system of social values that helps them choose among products. This influence on the consumer decision-making helps drawing an image of what the market is for her.

Accordingly, a similar logic is argued to apply to consumers and entrepreneurs. Figure 1 illustrates the cases.

In the consumption decision-making environment illustrated, some institutions may be relevant to entrepreneurs, but not necessarily to consumers (and vice-versa). For instance, trade modes between the firm and its suppliers are germane to the entrepreneur but may relate only marginally to consumers, if they relate at all. In addition, security standards on internet purchases may be relevant to a group of consumers, but not to others. Entrepreneurs and consumers, through personal history and learning experiences, come to a certain decision holding previous habits of thought and cognition capacities. These will help them interpret and validate (or not) institutions and institutional information in a next round of interaction. In a continuous learning process, institutions bounce back in a reconstitutive downward process, compelling individuals to review their habits and decision-making procedures.

For instance, in a new job a person interacts with different people in a different working environment. She is exposed to established patterns of interaction, administrative procedures, dressing codes, and so on, which are particular collective habits that may be new to her or that she does not hold. She may be compelled to review her dressing, commuting, or lunching habits. New habits lead to buying different goods—an economic impact that, though probably minute at this individual scale of things, may add up to non-trivial results on a mass consumption society. Something similar happens when a firm chooses to diversify and starts producing on a different technological basis. Personal practices, convictions and concepts are put to check, even if unconsciously. The market concept is also subject to such a process: because of individuals-institutions interactions, there is a recurring review of what the market is and what institutions form it.

Consider that firms have an interest in interfering with consumers' choices and try to persuade them to buy their products. If the market is seen as a set of institutions, firms need to somewhat play with the institutions that compose it. If the market is both a personal and an interpersonal concept, the entrepreneur has to reach the mind of the consumer and persuade her to *see* a market that is different to what she habitually sees. The change needs to find a place in the consumer's habits of thought and cognition. In the neoschumpeterian view, innovation is an exchangeable invention. In a neoschumpeterian-institutional approach, innovation is more than that: it is the creation or recreation of the consumer's image of the market. As a result, the concept of the market held by the consumer is built and rebuilt by the innovative entrepreneur. This process is illustrated in Fig. 2.

The innovator is able to change market institutions purposely by upward causation. In doing so, the innovator interferes with the decision-making environment and affects the consumer logic by reconstitutive downward causation. To this extent, concepts, beliefs, goals, desires and preferences of consumers can be recreated (though not determined). People buy not only cars, jackets, and soda. They buy high status products, Hollywood stars' clothes, and young people's energetic drinks. The innovator is the firm who has the ability to "teach" meanings to consumers, who learn to prefer a good that stands for a group or social value. Callon *et al.* (2002) argue that the definitions of goods and products are not the same: goods are analyzed as a static concept, whilst products are the result of a sequence of actions of the firm. The product is a changing entity that tries to persuade consumers of its worth (Callon *et al.*, 2002). Therefore, the product is a process that firms coordinate in an attempt to sell it to the consumer, and, as the marketing

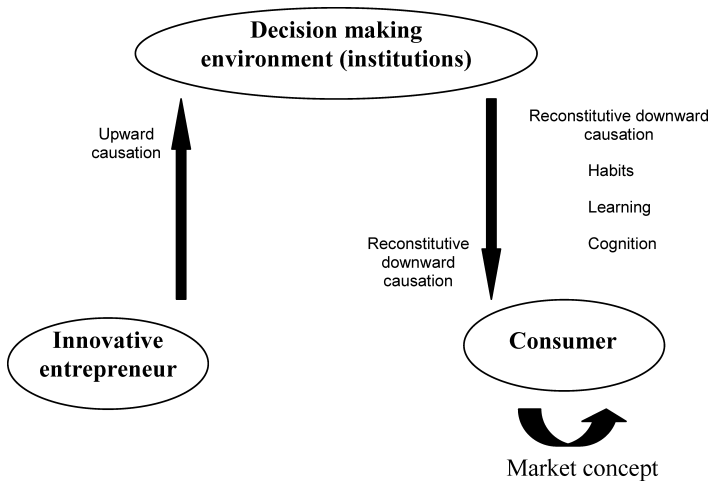


Fig. 2. The innovation process.

principle holds, its transformation can happen inside the consumer's mind.

In this way, technological aspects are only part of the game. An innovation to succeed must have market results, and these are obtained only if consumers are persuaded to buy the new product. If the entrepreneur has no power to promote upward changes in institutions, technological changes may stall. Differently, if the entrepreneur manages to build an upward causation drive, technological change may not even be necessary to obtain competitive advantages.⁵⁾ However, this interference in consumers' habits has its limit, for habits are stable entities (and continuously changing them is by definition impossible). Individuals acquire habits through apprehending what to do or think in a certain situation from the options collectively open to them. An acquired habit, in its turn, becomes a new basis for learning, and then on in a cumulative process of social apprehension. Consequently, the reconstitutive power is much more intense over younger

⁵⁾ The third-party certification movement in food markets is a case in point. The certification is allegedly proof of certain qualities that the consumer cannot verify herself. The certifying organization is allegedly independent from the producer and certification free from collusion and conflict of interest. As a result, consumers get the information they are unable to obtain alone. As Hatanaka *et al.* (2005) argue, however, the organization can be easily captured by food retailers. The power of these companies has institutionalized third-party certification to their own interests, while still claiming that consumers get more information from neutral sources. It can be seen in this case that the differentiation strategy is targeted at consumers' cognition. By downward causation firms try to interfere in what consumers think of food safety and its market chain.

than older habits.⁶⁾

The entrepreneur faces the bigger challenge of establishing a path to consumers' minds in order to obtain profits. Innovation involves interfering with the market as a set of institutions and, consequently, with consumers' choice. Interfering in the complex set of institutions that makes a market means redefining the competitive arena. There is no warranty that a new institutional design will give competitive advantages to the firm that promoted it. Advantages are still conditioned to the entrepreneurs' image of the market, which is always subject to mismatches of all kinds and may not be able to give the entrepreneur enough resources to influence consumers' habits and cognitions.

As a consequence, the neoschumpeterian concepts of appropriability, cumulativeness and opportunity gain a more inclusive definition, relating now to how entrepreneurs can interfere in the consumers' learning process through habits of thoughts and cognitive abilities. The consumers' reconstitution is what explains how a firm deals with continuous success in the market. Accordingly, appropriability refers to the ability of the entrepreneur to use an upward causation drive for her purposes, reconfiguring the institutional set to her favor and, consequently, interfering in the consumers' concept of market through downward causation. In this case, the entrepreneur is able to either deal with consumers' current habits or establish new habits, and receives the bonus — competitive advantages — generated by such actions. The former case is more usual as it is connected to how the importance of a good is created according to given concepts and preferences of consumers. In this case, appropriability is a matter of understanding how social influences evolve and how to act accordingly. An entrepreneur who is able to build an image that matches the collective skills and thoughts of the demand side has enough power to reconstitutively create appropriability. It is about sending a message that reaches consumers and builds upon their current concepts and preferences.

Creating appropriability through new habits includes the creation of ways and means related to concepts and/or preferences which give the exclusive returns to the innovator. It is not just a matter of communication, but also of the entrepreneur's ability to permeate social ongoing concerns with her interests. The complexity of this process has two central facets: how to create something intangible, such as a way or a meaning, in the social environment, and how the entrepreneur can get hold of the underlying advantages. Indeed, it may take a long period for this kind of appropriability to be built as, for

⁶⁾ This does not mean that an entrepreneur cannot reconstitute lasting habits of consumers, but it is difficult to "teach an old dog a new trick." For more details, see Veblen (1899, 1919b).

instance, brands that develop cultural values (e.g. think of Coca-cola as the soda that families have been drinking for generations, and Toyota as high quality cars that rarely need unexpected servicing).

Cumulativity is the capacity to read the environment in order to keep causing subsequent upward changes, leading to a cumulative process of institutional change led by the interests of a firm or group of firms. For a cumulative process to take place, some appropriability must have occurred, so the image of the entrepreneur was able to give her sufficient understanding to deal with the institutional set. It is hardly a one time event. Once learned how to deal with current habits and cognitive frames of consumers or after the creation of social ways and means, the entrepreneur can use this advantage to innovate further. Branding is a case in point. A well-accepted brand can be the point of interference in the consumer's choice, becoming accountable for a cumulativity process. The brand can be seen as a market signal regarding quality, ideology, family values or other social elements consumers aspire to have or keep. When appropriability occurs by the creation of cumulative spillovers, a strong cumulativity drive can take place through social reinforcement.

Opportunity occurs when the knowledge of how to impact the market by upward causation can help the innovator in terms of scale and scope. Branding can also illustrate the case. Brands are perceived by consumers as valuable in association with a good, a line of products or quality standards. Coca-cola became a famous brand as a soda, and Toyota with quality cars. Establishing a brand, thus, is a way to keep promoting reconstitutive downward drives and interfering in consumers' habits of thoughts and cognition, and it can happen through other goods and services. Opportunity is about using a known downward causation process to interfere in consumer behavior over time, through different products or even industries. Cumulativity and appropriability will condition the opportunities seen by entrepreneurs in their images. As a result, appropriability, cumulativity, and opportunity influence the entrepreneur's concept of market. They present him with how the institutional set, and thus consumer's habits of thought and cognition, can be handled.

Using Callon's terminology, appropriability regards a good; cumulativity can regard both goods and products; and opportunity regards only products. This logic takes place in accordance with consumers' perception of goods and products in a twofold setting. First, existing goods and products are able to satisfy consumers' existing preferences and concepts. In this case, the entrepreneur's builds an image that aptly captures the prevailing institutional channels to consumers' existing habits. Second, the entrepreneur

can envisage a new institutional set or channel to consumers that may offer them different concepts or values with social legitimation. In this case, firms use an upward drive to change the institutional set which in turn exert a collective downward drive that makes individuals review their existing habits. So in the consumer's perspective, appropriability means that the good is in line with her logic or her logic has changed in favor of what the good is meant to represent. In the latter case, there is interference in cognition and habits of thought that culminates in a revision of preferences and concepts. This is a psychological process that enables a stronger connection between the consumers' decision-making and the good.

Once appropriability is established, cumulativity can work through the same institutional channel. In other words, it can deal with already established market institutions or it can modify them. But now there is a perceived channel for further attempts (through entrepreneurs' upward drives) at changing the consumer's images through downward drives from the institutional set. Appropriability breaks up an established persuasion set in the consumer's view of the market, and starts introducing a different persuasion set through which new products can be presented in connection with the same initial good. This is the case of a complete process of cumulativity.

In the perspective of the entrepreneur, opportunity is how market institutions can be used to influence consumers to buy new or different products. But the opportunity also means that the existing institutional set is what it is as a result of an upward chance seized by the entrepreneur in presenting the consumer with a certain good. Different from cumulativity, opportunity implies that a large number of products—based on the same good—can make their way into the consumer's habits and cognition in decision-making.

4. Modeling Complex Interaction: Accomplishments and Challenges to Computer Simulation

Economics is very fond of translating narrative argumentation into mathematics and statistical models. Complex and circular interactions as the ones detailed above, however, are hard to model with existing data and traditional statistical methods. More often than not, models end up working under simplifying assumptions, such as full rationality and complete information, so analytical solutions can be presented (see Gilbert and Terna, 2000).

Evolutionary economists have adopted computer simulation as a method in order to deal with such obstacles and demands. In a computer simulation a model is represented

as a computer system that allows logical commands other than mathematical equations. The cumulative evolution of decision making, for instance, can be better expressed by algorithms computationally created than through mathematical equations only. This helps explain why neoschumpeterian insights are more likely to be translated into computer simulation models. By computer simulation, appropriability, cumulativeness, and opportunity can be “empirically” applied in closer observance of complexities detailed by theory. The same occurs with the institutional concept of habit, as carried out by Hodgson and Knudsen (2004).

The arguments presented in this paper may provide inputs for computer simulation, although not without some challenges. One is that the relationship between firms (entrepreneurs) and consumers in the determination of their decision making cognitive frames allows for a two-way simultaneous interference in each other’s reasoning. One additional challenge is that the cognitive abilities of the decision makers make the decision environment unique for each individual.

As for the first challenge, some studies have tried to deal with it during the 2000s. The relationship between firms and consumers and the influence of one in the decision making of the other have been represented in co-evolution models, such as those proposed by Harrington and Chang (2005) and Ida (2010), and also in agent-based models centered in the interaction between firms and consumers as social networks, such as those proposed by Ohori and Takahashi (2009) and Garcia (2005). In general terms, these models stress the influence of firms on consumers’ decision making as firms strive to achieve their goals.

The second challenge, the modeling of cognitive abilities as part of the decision making of an agent, has proved less yielding. Difficulties seem to endure in models that claim to introduce cognition as such. Gilbert and Terna’s (2000) explanation about how to insert cognitive abilities in computer simulation models, for instance, does not deal with cognitive abilities. For Gilbert and Terna (2000), it is possible to describe an environment in a computer simulation through a bunch of rules and master rules. The former are norms of behavior and the latter are social conventions that regulate which and how norms take place. In this computational environment, the diversity among people is represented as different types of agents, which are created according to the programmers. Hence, programmers insert how actors understand those rules and master rules. The existence of a rule maker actor- a type of agent who is able to interfere in the behavioral guideline of other actors - is also highlighted by Gilbert and Terna (2000).

The existence of rule makers in a computer simulation is central for an evolutionary

and institutional Economics approach. As emphasized above, there are actors who can perform enough power to establish a rule of behavior. Having said that, however, what Gilbert and Terna (2000) manage to introduce in their simulation model is not a cognitive process *per se*. If the programmer inserts how actors understand the environment, then the model is taking the cognition of the programmer into account instead of the cognitive skills of the agents. Setting up initial conditions and providing “fixed” algorithms for change in a computer simulation are essential, but at the same time not enough to reproduce agents that must be able to understand the environment according to what they learned from the history of individual-rules interaction. As a consequence, initial cognitive abilities must take place through the programmer, but the social types of the model should be able to learn and review their abilities (or the “fixed” algorithms). Otherwise, the model will consist of agents with the cognitive abilities of the programmer only.

As Ostrom (1988) emphasizes, computer simulations are ideas of a theorist expressed into a program. This means that simulations greatly reflect the researcher’s (or programmer’s) cognitive frames and habits of thought. The isolation of researcher’s cognition can happen by the way the input data are generated. A number is a number and a symbol is a symbol until someone gives them meanings that should be given by the virtual agents of the model. Hence, when a researcher models an activity, it is important to take into consideration what entrepreneurs and consumers of such activity understand by the environment of production and consumption of that field, as well as how entrepreneurs can interfere in the consumers’ decision making. Considering that individual entrepreneurs and consumers can have different images of the market, simulations can become too complex to be properly run in a productive way. Obviously, as all models simplify reality, simplifications can and must happen in simulations, and we should be very explicit about and aware of the limits of the conclusions we reach as a result.

Computer simulation is a method that makes up for the high costs of obtaining real data. As the proof of the pudding, however, is in the eating of the real pudding, simulations can help persuade economists to engage in other methods (e.g., case studies, field work, and experiments) to provide evidence that circular causation is relevant for real entrepreneurs and consumers as they interact in an institutional-rich environment.

5. Concluding Remarks

According to the neoschumpeterian tradition, firms operate in a selective market

environment. They pursue competitive advantages through differentiation of products and production, to which innovation by technology is a central. The market is an intersubjective concept because it is based on what firms think the competition locus is, wherein they expect to establish competitive advantages. Their images about the market and competitive advantages are constantly renewed in reaction to changes in the environment that they themselves cause. In this essay, some institutional elements have been added to this view to the neoschumpeterian view of competition.

Economic institutions in the form of habits (of action or thought) and rules (formal or informal) create foreseeable regularities of social behavior, molding crafting and being molded crafted by individuals as they interact. Entrepreneurs and consumers, thus, act according to non-purposive unconscious drives—habits of action and thought—that structure their cognitive capacities, helping them make sense and combine information, and therefore simplifying decision-making. Their actions are the concrete expression of a market, which can be thus analyzed as a set of institutions. The image that entrepreneurs and consumers make from the market (and that guide their strategies for action) emerge from their cognitive capacities and habits of thought. Hence, the market is an interpersonal concept that compels individuals to review their goals, beliefs, aspirations, and preferences by reconstitutive downward causation.

In order to gain competitive advantages, the entrepreneur needs to reach consumers and this is intermediated by market institutions. In this context, innovation means interfering successfully with market institutions in upward causation. Innovation in the form of a new product in the market, however, may not be sufficient for firms to succeed—it depends also on the consumers' perceptions and preferences concerning the usefulness and/or social representation of such a product. Successful firms are those with sufficient capacity to interfere with the environment and stand out by establishing general guidelines for consumers' behavior. This is an important part of how competitive advantages, habits of thought, and cognitive abilities are acquired—*i.e.* by using and promoting institutions that modify consumers' preferences.

The ideas in this essay may find useful application in empirical studies of markets regulation, branding, certifications, marketing, advertisement, and others. However, it is important for empirical studies to take into account that entrepreneurs and consumers work according to their cognitive abilities and those elements should be an essential part of the empirical models. This essay attempts to put together some elements from neoschumpeterian and institutional traditions in order to provide a more elaborate and process-centered view of consumption. There is obviously much more to be done in this

direction, as this seems to be one of the less explored fields in non-mainstream economics.

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