Learning to be Sociable: The Evolution of Homo Economicus

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Abstract

This paper studies the evolution of the economic man (Homo Economicus) from its original conception till current day. By analyzing the discourse of economic articles, we provide a chronological account of the economic man's intellectual and philosophical development as it evolved from what we term as the philosophical age to the neo-classical age and finally to the strategic age. The paper then shows how the economic man in the strategic age is slowly finding convergence with the sociological man (Homo Sociologicus). A reconciliation of the two sapiens is difficult. However, recent papers on behavioral and experimental economics provide insights into a possible reconciliation. Our study argues that the purpose of the sociological man is to identify who he is, how he interacts with people within a society and the antecedents to such behaviors. Homo-Economicus, however, has no overarching philosophical assumptions on what he values. The objectives of each discipline are different and once one is mapped on to the other, it is unclear if there is truly any tension between them.

I

Introduction

THIS PAPER STUDIES THE EVOLUTION of the economic man (Homo Economicus) from its original conception by John Stuart Mill and Adam Smith till current day. By analyzing the discourse of economic articles, we provide a chronological account of the economic man's intellectual and philosophical development as it evolved from what we term as the philosophical age to the neo-classical age and finally to the strategic age.

The philosophical age saw the formation of Homo Economicus and the development of its ideological foundations including its most enduring axioms of self-interest and rational behaviors. As the economic man journeyed into neo-classical economics, he became an analytical tool for the prediction of outcomes and a model for the self-interested utility maximizer operating with finite resources within a society. The neo-classical age also saw spin-offs of the economic man to behavioral,

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contractual and social dimensions as criticisms were heaped upon its original concept. Our study discusses the criticisms and show how, as the economic man enters the strategic age, issues such as social norms, interactive choice, learning and cooperation take center stage as economists strive for a more robust formulation of Homo Economicus.

The paper then shows how the discourses in economics are allowing Homo Economicus to find convergence with the sociological man (Homo Sociologicus), as the former loses its philosophical and ontological assumptions. We survey the literatures of phenomenology, social constructionism and role theory to illustrate the entity of Homo Sociologicus, and examine the fundamental and theoretical issues that arise when attempting to reconcile the two. It is difficult to reconcile the two sapiens, because the study of economics view man as atomistic and self-interested, while sociology views man as one whose identity and actions are defined by his role in society. However, game theoretic models provide insights into a possible reconciliation. That is, if the payoffs of economic man's choice are not based on his own preference or his own judgment, but are determined by how he is able to predict the collective choice. Then the question of how he devotes his social intelligence to anticipate what the collective choice would be becomes the focus of consideration in maximizing his payoffs. In this case, while the motivation is self-interest in nature, the economic man must become more socially intelligent through learning and understanding the roles of various players in society. Therefore, interactive choice and iterated models of learning and thinking could be viewed as antecedents to role behavior expounded in sociology. The difference between Homo Economicus and Homo Sociologicus is therefore not about the assumptions of human nature, contrary to popular belief. As we argue here, the evolved Homo Economicus in the strategic age does not have any assumptions about human nature - merely that an individual is self-interested - nor has he any overarching philosophical assumptions on what he values. Hence, we claim that an individual can be both Homo Economicus in terms of his behavior while retaining the ontological assumptions of Homo Sociologicus.

II

Literature Review

HOMO ECONOMICUS IS A CORNERSTONE on which economic theories are built on and its concept was thought to be submitted by John Stuart Mill in 1836 (Persky, 1995). For Mill, economic man is "*…solely as a being who desires to possess wealth, and who is capable of judging the comparative efficacy of means for obtaining that end* (p.321)". Although Mill pointed out that the central idea of economic man is the link between efficient means and wealth, the meaning of wealth is not merely in attaining material pleasures. Other goals such as accumulation, leisure, luxury and procreation are also embedded in the pursuit of "wealth" (Persky, 1995). Therefore, the economic man is one who judges the comparative efficacy of means to obtain wealth, as well as seeking to maximize pleasure. Adam Smith's seminal work (1776) suggested that by merely acting on his own self-interest, he can unintentionally promote public interests. Yet, his freedom of pursuing self-interested gains is not unbounded (Grampp, 1948), because a free market can work well only when the divisions of labor and unfettered competition are built on a civilized society (Coase, 1976; Kaufman, 2002). This is similar in tone to Hobbes' (1947) work insofar as he posited that human nature is self interested and some people are thought to be "sorely profit pursuing" (1969), which could be taken as an early germ of the homo economicus (Moss, 2002). However, Hobbes' view is different from classical economics from the point of view of spontaneous social order. In classical economics, social order could be achieved by the “invisible hand”. Hobbes’ felt that sovereign power and punishments are necessary to achieve order and peace.

As economic man journeyed into neo-classical economics, maximizing wealth and pleasure took on the more generic term of maximizing utility, often described as benefits for the individual. Hence, as Mises (1996) noted, human action (and therefore economic theory) can only be understood when aprioristic views of human nature (as self interested) is mapped onto the actions. This is similar to Robbins (1932, 1945). In *An Essay On the Nature and Significance of Economic Science*, Robbins claimed that “*Economics is the science which studies human behavior as a relationship between ends and scarce means which have alternative uses*” (Robbins, 1945, pp.16), Robbins deemed that economic reasoning is a neutral process, which means economics is about what *is* rather then what *ought to be* and that, as a science, economic theory is applicable to various situation depending on the extent which concepts accurately reflect the actual situation. Robbins therefore makes a case for the kind of deductive methodology that makes economics different from other natural and social sciences.

When such a deductive methodology is employed in economic analysis, the economic man is usually assumed to be perfectly rational. He (the economic man) is able to predict every possible outcome for all his choices, and his decision will be the one that will maximize his utility (Weale, 1992; Schneider, 1974). Without complications such as personality, value, belief, and emotions, economic man’s behavior can be explained by his own self-interested orientation. Other elements such as social norms are akin to rules of the game - economic man maximizes his utility within these rules. In economics therefore, the definition of the game rules can define the boundary of economic man’s behavior, but does not change the fact that economic man will always be self-interested. In other words, for the economic man, even sacrifice is driven by self-interest. Although some may argue that the concept is unrealistic, it served as a powerful analytical tool in neo-classical economics (Knight 1941).

Economic man is not without its critics, especially when empirical observations of human behavior seemed to contradict the predictions (Beckert, 1996; Mueller, 2004). Some argued that the concept of economic man is too narrow, as self-interest is not the only motivation, and people are often driven by social norms as well (Dahrendorf, 1968). Others claim that the ability to learn quickly is suspect as people often make the same mistakes. Simon (1957, 1972, and 1976) pointed out that human beings’ rationalities are bounded. Taking man as omniscience is unrealistic and cannot credibly explain real phenomena. In addition, Kahneman and Tversky (1979) found that behaviors are not always consistent with rational economic theory. Their studies showed that most people will act irrationally, but lean toward loss aversion. Benartzi and Thaler (1995) proposed the concept of “myopic loss aversion” to illustrate that people will weigh a unit of loss to be greater than a unit of gain. Benartzi and Thaler’s (1995) work brought forward the need for psychological consideration in traditional economics. Some argue that economists draw too many conclusions from mere behavior and ignore the antecedents to such behaviors. The theory of planned behavior (Ajzen’s 1991) suggests that one’s behavior is determined by one’s intention, and one’s intention is determined by his attitudes toward the behavior, subjective norms, and his perception of difficulty in performing the behavior. Thus, it isn’t enough to merely predict outcomes based on behavior, but to also explain why people behave the way they do.

This orientation was also proposed by Mises’ (1996) who felt that most important theorems in economics could be explained by the assumption that human behavior is purposeful.Although Mises’ (1996) view of human nature is similar to Robbins’ (1945) Mises argued that economists should deal with the real actions of real people and not build their theories on the basis of some utopian economic man (Kirzner, 1976, 2000). In *Human Action*, Mises (1996, pp.236-237) disagreed with the assumption of rationality. In his view, human beings are individually different and always with weaknesses.

In addition, some scholars do not take self-interest as a unique motivation for human behavior. For instance, Thompson's (1971) research into the behavior of the English crowd in the 18th century found that it wasn't only "rebellions of belly" that caused the food riots; the notion of legitimation to the riots also played a dominant role in causing them. In addition, other issues such as moral codes (Sen, 1982), social interdependence (Frank, 1985), social relation (Granovetter, 1985), institutions (Bowles, 1998), and emotion (Haidt, 2003) are seen to be associated with human behavior. Consequently, a self-interest orientation seems inadequate to explain outcomes.

As the pressure on the economic man to provide better prediction of outcomes increased, economists moved into the strategic age through the use of game theory. Game theory studies the optimal choices made by individuals when the payoffs to the individual is not a constant, but is dependent on the choices of other individuals (Spiegler, 2005). And given the individuals' rational choices, an equilibrium outcome is predicted (Nash 1951). Thus, interactive choice is a central issue in game theory (Harsanyi, 1995) and the economic man has evolved into a strategic being. For instance, the well-known prisoner's dilemma game shows how a player makes his decision by taking the other player into account. A cooperative game shows how players make binding commitments to achieve pareto-optimality (Rasmusen, 2001), and a bargaining model with incomplete information shows how players' initial beliefs about other players will affect their choices (Rubinstein, 1985). Players need to form beliefs when information structure is incomplete. In this case, interactive choice is built upon Bayes rule. The equilibrium which is achieved by updating beliefs through Bayes rule (i.e. Bayesian equilibrium), is also a crucial aspect of game theory (Binmore, 1992), because it shows that rational players will make choices in the light of new observations and information about others' actions (Mariotti, 1995).

As game theory developed into more sophisticated repeated games and evolutionary models (e.g. Samuelson, 2002), the development of the economic man concept became more robust in predicting outcomes. Kreps, et al. (1982) indicated that even if the information is not complete, players could be cooperative if they believed that other players could obtain benefits from the cooperation and reciprocate. In addition, Conlon (2003) provided a game to show that people could be cooperative for an extremely long time, and the cooperation does not break down easily. Thus, in contrast to the purely "Crusoe-like" neo-classical economic man, the strategic economic man makes interactive choices given the actions of other players, rules and payoffs in a given context.

Through game theory, models have shown that economic man could be altruistic and cooperative, imitating and learning from others. Banerjee (1992) demonstrated through a sequential decision model how each decision maker who observes the decisions made by previous players will imitate others if he thinks he will become better off by imitating. Besides this, two leading models of learning - Roth and Erev's (1995) reinforcement learning model and Fudenberg and Levine's (1995) belief-based learning model revealed that learning is motivated by self-interest (Feltovich 2000). In reinforcement learning models, players are not required to get the information of other players, because the cost of obtaining the information might be too high. Thus, a player does not need to form beliefs of what other players will do but would adjust his behavior according to the payoffs he earned before. If these payoffs are desirable, the player will reinforce the same behavior, but if they are undesirable, the player should adjust his behavior through the learning process. In contrast to the reinforcement learning models, Fudenberg and Levine (1995) indicated that the history of an opponent's plays and the memory of players should be taken into account and when players hold beliefs of what other players might do, they will choose strategies on the basis of their beliefs and expected payoffs. Similar to Roth and Erev's (1995) model, a player's belief will be reinforced if his personal belief is consistent with other players' behaviors. Thus, the evolved economic man is able to ameliorate his decision-making by learning.

In addition, models of the economic man in the strategic age has investigated other issues as well e.g. value, social relationships and roles (Burns and Gomolin'ska, 2000). Today, game theorists' construction of the economic man is far more complex, integrating other elements such as social relationships, roles, values, norms, and beliefs through economic models.

III

Social Issues and Economic Man

IN ECONOMICS, NORMS OR SOCIAL customs are often depicted as game rules that constrain the behavior of economic man. For instance, Akerlof (1980) incorporated elements such as reputation, obedience and disobedience of the community's code of behavior into the utility function and explained why some social customs could exist, while others could not. As for norms, neo-classical economists assume that norms will not affect people's decisions if they are irrelevant to behaviors. Nevertheless, some researchers have indicated that social norms will affect people's social behaviors (Kallgren, Reno, and Cialdini, 2000). Today, more economists study the relationship between norms and economic actions. For example, Lindbeck (1997) introduces social norms into the utility function itself, instead of assuming that the norms constrain behaviors. He proposes that social norms could be taken as a reward in itself e.g. the rewards derived from being approving or disapproving of others, or even in terms of bringing about the feelings of pride or shame. Some organizational behaviors can also be explained by using the utility function as well. Akerlof and Kranton (2000) found that besides monetary incentives, employees' identities with the organization also play a dominant role in work incentives.

From the examples above, we can see that the components of the utility function of Homo Economicus have been expanded. Economists do take monetary benefits as the only components in the utility function; a content state of life and well-being is often achieved through economic means. Furthermore, incorporating social norms into utility functions do not contradict the self-interested assumption, since economic man still acts as a utility maximizer. In other words, economic man adheres to norms not because there is intrinsic worth within the norms that would override his utility function, but because by doing so he will increase his utility. Yet, no matter how many social elements go into the utility function, economic man is still self-interested. This is in contrast to the view of sociologists as presented below.

IV

Homo Sociologicus

ELSTER (1989) STATED THAT ONE of the most significant cleavage in social science is the concepts of the Homo Economicus and the Homo Sociologicus. The concept of economic man stresses on individualistic preferences, while the concept of Homo Sociologicus stresses on the social notion of norms (Weale, 1992). Economic man is unencumbered by any personal relation (Grampp, 1948), while Homo Sociologicus is far more interdependent (Durkheim, 1893; Smelser and Swedberg, 1994). Economic man is assumed to be perfectly rational, while Homo Sociologicus is not all rational (Boudon, 1982) and has to be a part of society (Durkheim, 1956).

Economic man is driven by self-interest, whereas Homo Sociologicus tries to fulfill his social role (Hirsch, Michaels, and Friedman, 1990; Weale, 1992). Thus, attributes such as interdependence, bounded rationality, learning, constructed by society and driven by norms, roles and relations draw us into an impression of traditional Homo Sociologicus.

In the beginning of the 20th century, the development of social science depended largely on positivism. The scholars who held positivistic beliefs claimed that serious scientific arguments should be testable and falsified. Sociological methodology should rely on empirical means so as not to allow common sense or personal judgment to bias the research. Furthermore, the objectives of doing research are producing knowledge, explaining phenomena and predicting possible outcomes, and not to produce personal arguments. Husserl (1948), however, argued against this and took the position that human consciousness was the starting point to understanding objects. He claimed that the conscious experience is intentionally directed toward the object of its meaning (the reflection of the object), and the meaning is always charged with human's conscious experiences (Hazelrigg, 1986). Only after meaning has been formed will humans be able to reconstitute the same object in their consciousness, and the whole object world is constituted by the communication between the self's conscious experiences and the conscious experiences of others. Hence, an individual's perception of reality of one object could be experienced differently by others. Yet, although the original conscious experience of each person might be different, it could become similar through communicating, learning, and sharing. In short, consciousness is a starting point through which communication enables human beings to perceive the world they are living in, and therefore hold similar standpoints to an object. This point of view was incorporated into constructionism, and constructionists propose that the nature of the world is constituted by people's consciousness and experiences.

In constructionism, social reality is therefore constructed by the people who are in turn constructed by the existing society. Therefore, the process of social contructionism is similar to historical analysis, where people can be defined in terms of previous social processes (Hacking, 1999). During this dynamic process, they are produced by the previous society and they will reproduce another society which will be inherited and reproduced again by them and others. Reality and knowledge are also derived from this process, and other conceptions such as class, roles, institutions, nations, communication, and economic behaviors are all socially constructed. Hence, Homo Sociologicus is a product of social processes and also an agent who is able to reconstruct social processes. During this construction process, certain roles will be gradually given to the Homo Sociologicus, and these roles will further define how he changes and reconstructs the society. Role is thus an important mechanism in social construction, because role defines how people interact with others, who they can interact with (that might determine what they can learn), and how they interpret and reconstruct this world. Thus, role could define and confine the means and scope of social construction. However, the function of role is very subtle. Turner (1956) defined role as a set of behaviors that could be regarded as a meaningful unit, and the meaningful unit makes the linkage between behaviors and roles that could be understood or could be expected by others. Dahrendorf (1968, p.6-7) further defined Homo Sociologicus as the bearer of socially predetermined roles. By obeying the obligations of the roles and by learning the expectations of the roles, Homo Sociologicus is able to become a part of society and build his social relationships with others. The meaning of role therefore relates to a particular status, position and a particular value in society. Furthermore, the concept of role focuses on man's participation in an interactive process (Parsons and Shils, 1951), and not merely the status or positions of the role. Hence, it is more relevant to discuss how a role interacts with other roles than to discuss the status or position of the roles. In addition, role is a set of norms (Turner, 1956), and norms guide what Homo

Sociologicus should do and how he interacts with others (Thoits, 1992). Although Homo Sociologicus may not be willing to fulfill that role, he cannot relinquish his role without paying a price, because roles will create expected modes of behavior for the Homo Sociologicus, and there will be penalties if he fails to fulfill these expectations. Briefly speaking, Homo Sociologicus is neither purely self-interested nor perfectly rational; he is driven by social forces that are often beyond his control (Abell, 1991).

The concept of Homo Sociologicus is widely used in sociological research today. Many of the research relate to the concept of role. For example, Callero (1985) conducted an empirical research of 658 subjects of blood donors, and found that the persons with high blood donor-identity salience would define themselves as regular blood donors, have stronger relationships with blood donation, and donate blood often. Another example is DeGarmo and Forgatch's (2002) research on the impact of role identity salience to the family interaction in stepfamilies. Their research showed that negative interaction with a spouse who has a highly spousal (role) identity salient increases psychological distress, as opposed to when the spouse has low spousal identity salience. The central issue in Callero's (1985) and DeGarmo and Forgatch's (2002) works is that people's actions significantly relate to the role identity salience.

Apart from role identity salience, social identity theory is another issue that discusses the relationship between the individual's behavior and social structure. However, social identity theory focuses on social categories such as nationality or marital status (Hogg, Terry, and White, 1995). In social identity theory, the individual is defined by the social category to which he belongs. Thus, an individual has no identity except for his membership within that category. Furthermore, a person's social identity comes with his perceived membership in the social category (Hogg and Vaughan, 2002), and that social category provides stereotypical conduct and evaluation of each member. Social identity therefore affects the individual's behavior, and individuals can therefore be described by their social identity.

In summary, the concept of role identities and social identity both imply that the individual's behavior is affected by social structure, and individuals themselves can also be categorized by these social categories (Stets and Burke, 2000). This, then, is the sociological man whose identity is defined by social elements such as roles. The concept of sociological man has had no significant change even in modern time. As Black (2000) commented, modern sociology is still classical sociology.

As with economic man, Homo Sociologicus cannot eschew its philosophical problems. The first criticism of traditional Homo Sociologicus is on his propensity for not being self-interested. For example, how does Homo Sociologicus reconcile his self-interest and his social role? When Homo Sociologicus is struggling with his self-interest and the obligation of his role, which one would he choose and to what extent will his choice be categorized? Since Homo Sociologicus may not be solely pursuing his selfish interests (Hirsch, Michaels, and Friedman, 1990), his behavior is far more complex and unpredictable. Wrong (1961) criticized the conception of man in modern sociology as being "over-socialized", implying that man in sociology is overwhelmingly driven by rules. Furthermore, will the over-socialized conception possess enough power in explaining human being's behaviors? For economists, normative expectations can be explained by using the assumptions of self-regarding, optimally chosen, individual actions (Abell, 1991). Some scholars such as Kahn, Lamm, and Nelson (1977), Messick and Sentis (1983) claimed that self-interest is still a motivation when facing different norms. Although Dahrendorf (1968) claimed that Homo Sociologicus still keeps his nature yet retains his freedom to act in a self-interested manner, there seems no decision criterion to show how Homo Sociologicus makes choices between norms and individual self-interest.

Another criticism is on the explanatory power of Homo Sociologicus in economic actions. Can the concept of Homo Sociologicus provide better explanations for economic actions than the economic man does? The sociologist Granovetter (1985), who reviewed classical economics, neo-classical economics, new institutional economics, transaction cost economics, and sociology, propounded that people's behavior are deeply affected by their social relations but that economic actions are embedded within social relations. Nonetheless, the socially constructed sociological man is far more complex than the economic man and is therefore difficult to be modeled. Incorporating one more social element (e.g. roles) into the concept of economic man will result in the whole structure of economics becoming extremely different and complicated.

V

Learning To Be Sociable

AS HIRSCH, MICHAELS AND FRIEDMAN (1987) put it, "*The most basic difference between economics and sociology concerns their assumptions about human nature*" (p.322). Economic man is driven by self-interest, but the behavior of Homo Sociologicus is determined by his social role. Can economic man and Homo Sociologicus be reconciled? As discussed previously, economists such as Becker (1976, 1981), Lindbeck (1997), and Akerlof (1980, 2000) have adopted economic methodologies to research into social issues. Nonetheless, economic man and sociological man seem unable to be reconciled because the root of economics is the self-interest of each individual regardless of what his identity is. Thus, the atomistic nature of the economic man is a contradiction to the concept of Homo Sociologicus, where man and society is inseparable.

The reason why the sociological man holds a fair amount of legitimacy comes from the critique of the economic man. While it is convenient to incorporate social values, norms and customs into an individual's utility function or game rules, it is more problematic to try to explain why these social values, norms and customs matter in the first place. Also, it is left to the judgment of the modelers to choose which values, norms and customs should be included in the utility function; hence such elements may not be derived from the society in question but may be arbitrarily chosen. In other words, the economic man, and indeed, economics as a tool, is without values or judgment in the true spirit of Robbins (1945) and Mises (1996). Like mathematics, it is merely a tool to analyze economic society whereby the elements of what that society values is fed into it so that outcomes may be predicted, using an algorithm that is based on rationality and self-interest. Therefore as a tool, economics is not inadequate to make judgments on what is best for society, since what is best is predicated on what elements were brought in. Non-economic researchers often misunderstand the philosophy of economics, believing that it is one that assumes monetary and material benefits as the ultimate goal. In truth, economic philosophy is even less than that.

Role behavior *and* Self interested. Role behavior can be explained within self-interest economic behavior, even without factoring specifics into the utility function or game rules. In Keynes' (1936) beauty contest, the best payoffs come from one who is able to predict the candidate that everyone else liked, and not based on one's own judgment. Keynes wrote: "It is not a case of choosing those (faces) which, to the best of one's judgment, are really the prettiest, nor even those which average opinion genuinely thinks the prettiest. We have reached the third degree where we devote our intelligences to anticipating what average opinion expects the average opinion to be. And there are some, I believe, who practice the fourth, fifth and higher degrees."

The meaning behind this gamble, as Keynes (1936) addressed, is that players' choices are nothing to do with their own preferences, but relate to collective choices and their ability to predict or choose the collective choice. In other words, social consideration goes into game theory framework, and we see why an economic man could follow collective choices or norms without contradicting his self-interest assumptions.

Interactive choice and iterated models of learning and thinking (Camerer, and Ho, 1999; Camerer, Ho and Chong, 2003, 2004) could also be viewed as antecedents to role behavior expounded in sociology. In contrast to economic models that incorporate social or ethical values within their utility functions, different types of seemingly socialized behavior can result from the individual's perceived differences in the degree of rationality of other players when the collective choice is necessary to maximize the payoff of individuals. Thus, players need to devote their social intelligence to anticipate what others might do on the basis of their historical or cultural choices. When the best outcome can only be achieved by having a choice that is predicated on collective choices, a rational player who makes his choice according to the collective choice may be seen as playing a "role", while *retaining* his self- interested orientation.

The *self* in Self-interest. Homo Economicus assumes that man is atomistically self-interested with distinct and discrete boundaries (an obvious positivistic inclination), an assumption that sociology researchers consider naïve. Hence, economists are prone to analyzing the self-interest atomistically, with the actions of the self interacting with (e.g. games), or driven by (e.g. social values in utility function) society. Sociologists, on the other hand, see the self and the society as inseparable. Could there be an argument for the "self" in the self-interested economic man, as that which is embedded within the society as according to sociologists?

If so, it can be argued that the inseparability of self and society is not in conflict with the notion of the economic man. While sociology is concerned with the role and identity of Man, economics on the other hand is not. Economics does not provide the philosophical notion of what Man is. One could then argue that Man, when interacting with or is driven by society, even in an atomistic fashion, "loses" its atomistic nature and becomes sociological man i.e. a self defined by society. Thus, the outcomes predicted by economists do not provide inferences on the philosophical assumptions of Man, but merely on how he behaves driven by what he values. By bringing social norms and values into the individual's utility function, it can be argued that this could be the same as the inseparability of self and society, particularly when *how* self and society interacts is not specified in sociology. By looking at the choice of an individual that seem like that he is performing a "role", although it could be that the interactive choice is motivated by self-interest, an individual is both Homo Economicus and Homo Sociologicus.

For example, Cooley's (1902) "Looking-glass Self" theory described the self as not being first individual and then social, and that self and society are inseparable from each other, with that unity achieved through communication. In Cooley's work, selves cannot be isolated from society because self builds society, and society forms a mind of self. As Cooley said, "There is no sense of I without its correlative sense of you, or he, or they."

While sociologists such as Cooley are interested in the definition of self, economics is more concerned with the choices made by the individual. In other words, it's all well and good how an individual perceives himself, but ultimately, how does he make the choice, given the identity he has and the scarcity of resources? Economics does not have a definition for self. It merely suggests a tool based on self-interest, and it has left the researcher free to decide what exactly that self is interested in. In addition, modern interactive economics is not keen to understand the definition of the self, but to predict what this "self" would do. It hence provides the methodology for understanding that interaction so that outcomes can be predicted. Since sociology does not provide answers to *how* self and society interacts, it cannot be said that the two (self and society) are irreconcilable.

Finally, the purpose of the economic man is to predict his behavior and look at the interactive choices he has to make within the society in which he functions, considering the scarcity of resources. The purpose of the sociological man is to identify who he is, how he interacts with people within a society, and the antecedents to such behaviors. Homo Economicus therefore has no overarching philosophical assumptions on what he values, nor are economists interested to seek its ontology. The objectives of each discipline are different and once one is mapped on to the other, it is unclear if there is truly any tension between them.

VI

The Future of Economic Man

OUR PAPER INVESTIGATES THE DISCOURSE OF economic articles over the past century. Homo Economicus that began with philosophical assumptions of Man has evolved into an algorithm to predict outcomes dependent on the economist's assumption of what the individual values. Homo Economicus, therefore, has lost its philosophical and ontological origins and could even be, in terms of how he behaves, a sociological man. The difference between Homo Economicus and Homo Sociologicus is therefore not the assumptions of human nature, contrary to Hirsch et al. Indeed, economics, as far as the modern economic game-playing interactive man is concerned, does not have any assumptions about human nature; it merely presumes that an individual is self-interested.

Yet, even as an algorithmic tool to predict behavior, a further point requires consideration. When making an interactive choice, the concept of the "other" in the interaction is also up for negotiation. Interactive choices in game theory assumes the "other" as one who is identical to the individual, and who hold the same utility function to be true. This does not have to be, i.e. game theoretic axiom of $i \neq j$ could be taken much more broadly than it is currently and different players could have different utility functions in an interactive game. Clearly, equilibrium outcomes would change and be vastly different, but would not contradict the basic assumptions of the algorithm.

By using the concept of economic man, economists have successfully explained how free rider problems can be alleviated by clarifying property right (Olson, 1965), and why good cars would be driven out from market and only lemons are left (Akerlof, 1970). Other issues such as differentiating insurance premiums (Stiglitz, 1976), governance structures (Williamson, 1975, 1979, 1985), and public choice theory (Brennan and Buchanan, 1988) are also based on the idea of economic man, a testimony to the robustness of the concept. However, it is important to recognize that Homo Economicus is an algorithm in which the inputs have to be philosophically, sociologically and culturally grounded. Hence, excursions into anthropology, psychology, sociology, and philosophy could be very helpful for economists to obtain a more comprehensive view of human behavior.

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