Hobbes and the Early Uses of Economic Method[1]

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Imagine all the people sharing all the world.
Imagine no possessions.
I wonder if you can.
No need for greed or hunger, a brotherhood of man.
Imagine there's no countries.
It isn't hard to do.
Imagine all the people living life in peace.
— *Imagine* 1971 (words and music by John Lennon)

I

Introduction

The famous songwriter John Lennon suggested a thought experiment for his turbulent times when the United States was at war in Vietnam. He hoped that peace would break out if people could give up their selfish claims to possessions and learn to share. Lennon may properly be classified a part of the Romantic tradition in political and social thought because he thought that human cooperation and peace would emerge once corrupt social institutions were removed.[2] Some who preceded John Lennon did not reach such an optimistic conclusion. Indeed, 300 years before Lennon crafted his internationally celebrated lyric, the Englishman Thomas Hobbes concluded the opposite.

In Hobbes's thought experiment there would be no property rights and no sovereign power to enforce contracts. Unlike Lennon's thought experiment, peace would not break out. Instead, Hobbes predicted an awful perennial war of all again all. In his words "the life of man [is] solitary, poore, nasty, brutish, and short" (Hobbes [1651] 1972: 186).

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In this paper, I shall take a careful look at Hobbes's argument and take special notice of what methods of analysis he used to justify such a troubling conclusion. I shall argue that unlike Lennon and his "optimistic" predecessors, Hobbes did not build a "social-order-creating propensity" directly into human behavior itself. In his view, men and women are not automatically destined for sharing and loving. Much like the modern orthodox approach to economics, Hobbes highlighted the role institutions play in a world of scarcity to direct self-interested behavior toward productive ends.[3] Hobbesian man behaves not only in a self-interested manner but uses deception and guile as well (Hobbes [1651] 1972: 188). In Hobbes's model of the state of nature (SN), men and women are much more than the homo economicus of classical economics who quietly accumulate wealth and calculate the impact of every market exchange on net worth.[4] Hobbesian man is homo economicus with a vengeful eye, always ranking himself above others and taking pride in self-glory and self-dealing. According to Hobbes, in the state of nature "Force and Fraud" are "Cardinall virtues" and the concepts of justice and injustice are virtually absent (Hobbes [1651] 1972: 188).

My paper is organized in several sections. In the second section, I take a look at Hobbes's basic ideas about human nature. He imagined a model of natural man without the institutions of modern society and insisted that multitudes of men and women would be subject to endless quarreling. Furthermore, while individuals would have the ability to take stock and understand their miserable situations, they would not be able to overcome the mistrust they experience in order to organize their affairs more constructively. Hobbes appreciated that in the SN individuals are caught up in something quite similar to what later came to be known as a "one shot Prisoner's Dilemma."[5]

In section 3, I offer an interpretation of Hobbes's solution to the dilemma based on his main work, *Leviathan*. The solution involves the creation of a central sovereign power to end war and make a peaceful and economically productive life possible. In section 4, I claim that Hobbes's methods of analysis resemble those that are used in both classical and modern economics centuries later. When presenting his arguments, Hobbes used the techniques of comparative institutional analysis and methodological individualism and this is what gives his

writings a modern or contemporary tone. At certain places in his writings, Hobbes attributed an important role to self-interest as a motivator of human action but all in all the wealth-maximization version of the homo economicus assumption was not consistently applied in his work. A concluding section 5, follows.

II

Sources and Strategic Consequences of Quarreling

Hobbes found that man's quarrelsome nature—that is, human nature—is easily ignited into conflict for several reasons. First, the competition for limited resources in a world of scarcity leads to fighting and violence. Each person claims something to be his or her own against the onslaughts of others. Hobbes explains how men wish to "make themselves Masters of other [mens's] persons, wives, children, and cattell" and will start a battle to obtain these "possessions" (Hobbes [1651] 1972: 185). Against the Romantic tradition that does not consider scarcity a serious problem at all, Hobbes recognized the importance of scarcity and the human conflicts that flare up around it.

Second, men and women harbor a fundamental distrust and lack of confidence in the promises that others make to them. Because of this, contracts are precarious arrangements in which neither party finds it prudent to rely on another person's word. Suspicions between neighbors, friends and family leads to a constant tension exploding into periodic feuds.

Finally, individuals are by their very natures arrogant toward each other. According to Hobbes, and despite the superficial appearances of polite society, men and women everywhere always rank themselves against others. The happy individual is happy only as long as he believes himself to be superior to others. This superiority could be real or imagined; either way, these comparisons generate a deep distrust for interpersonal relations. With this combination of short fuses, envy and haughty spirits, life without a central governmental power to keep the entire community in good behavior would be intolerable.[6]

Hobbes's model of the SN is a mainstay of undergraduate education in the humanities. It has spawned a vast literature in political theory and moral philosophy (Strauss [1936] 1963; Taylor 1938; Warrender 1957). I

shall argue that it has elements of genuine economic modeling even though the specific issue that Hobbes dealt with was the origins and nature of moral obligation. Under what conditions and circumstances does one individual become obligated to carry out his earlier promises to another individual? Hobbes wanted to understand what is *necessary* in order to establish civil society and by implication a viable economic life.

The greater part of Hobbes's major work, *Leviathan*, consists of an extended theological discussion and textual exegesis of the Scriptures, intended to prove that the natural laws transmitted to ordinary men and women by God's good graces contain precisely the information that is needed to escape this life of misery and poverty. According to Hobbes, the solution consists of precepts or general rules "found out by reason . . . by which a man is forbidden to do, that, which is destructive of life, or taketh away the means of preserving the same" (Hobbes [1651] 1972: 189). After laying out these natural laws, Hobbes moves on to the scriptural and theological bases for his ideas about the relationship between the Church and the state.[7]

Hobbes's precepts are of interest to both the moral philosopher and to the student of economic theory. They are of interest to the moral philosopher because they deal with and establish the grounds on which the individual acquires a (religious) duty to obey the sovereign power within the broader Christian notion of commonwealth centered around the Church's representatives on earth. They are of interest to the economist because they illuminate the "game theoretic" problem of how difficult it is to arrive at a cooperative solution when individuals *distrust* each other and act strategically in pursuit of their self-interest (Williamson 1975: 9).

A. One-Shot Prisoner's Dilemma

Hobbes's solution to what has later been called the "one-shot" prisoner's dilemma problem or the "choice-independence problem" is of interest to the modern social scientist (Taylor [1976] 1987; Moss 1977). Consider the following thought experiment fashioned along lines suggested by Hobbes's discussion. Imagine two strangers, each at an equal distance from a lake filled to the brim with succulent fish. We must assume that there is no central authority setting down and

enforcing any rules about how the fish in that lake might be harvested and under what conditions. Against Lennon's image of both strangers sharing the lake and its bounty in a peaceful manner, Hobbes would have each individual trembling with fear that if he were to walk over to the lake and gather the fish, the other would attack, kill him, take his fish and claim complete hegemony over the lake. Despite the fact that the strangers share a language and could possibly communicate what amounts to a contract arrangement in which both mutually promise not to harm the other, neither individual trusts the other to the extent needed to make a non-violent arrangement work out. In light of these insecurities it is not too fantastic to imagine that both individuals remain some distance from the lake, afraid to go forward and unable to enjoy the cooperative outcome. And it would not help that both individuals understand the Hebrew and Christian scriptures and the prudential laws of nature contained in them. Their knowledge of natural law guarantees that they will *understand* their pathetic situation, but that is all it guarantees.

According to Hobbes, the first law of nature is

> That every man, ought to endavour Peace, as farre as he has hope of obtaining it; and when he cannot obtain it, that he may seek, and use, all helps, and advantages of Warre (Hobbes [1651] 1972: 190).

Hobbes's first law of nature actually authorizes the use of force and fraud in the absence of peace. Force and fraud are two instruments of war—a form of self-defense to which each and every individual has a natural rights.[8]

There is a second law of nature as well, as follows:

> That a man be willing, when others are so too, as farre-forth, as for Peace, and defense of himselfe he shall think it necessary, to lay down this right to all things; and be contented with so much liberty against other men, as he would allow other men against himselfe (Hobbes [1651] 1972: 190).

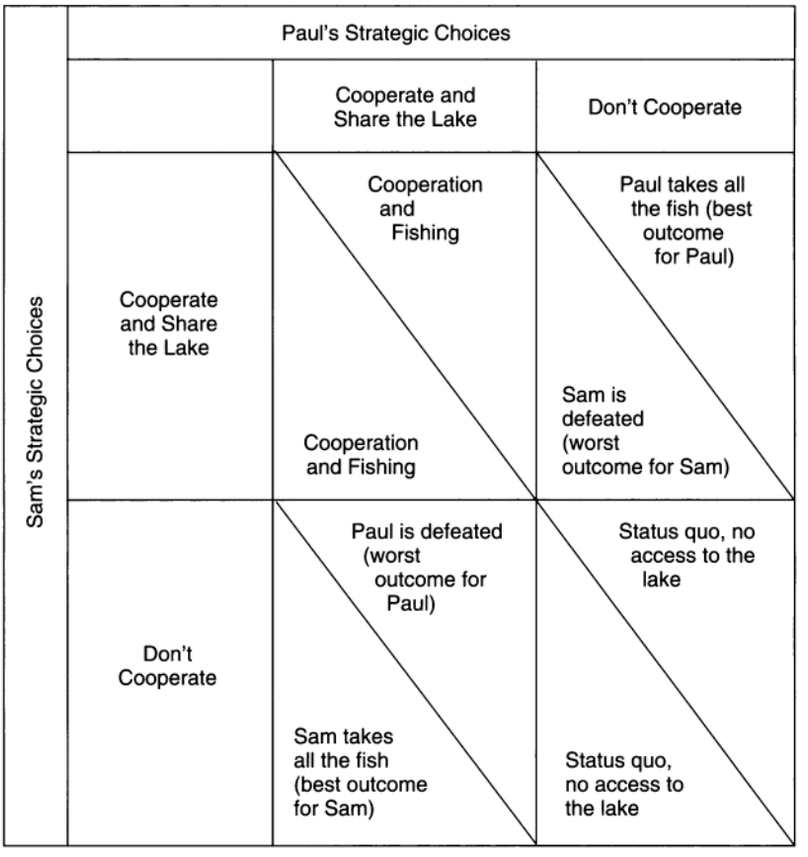
It is helpful to relate Hobbes's insights, especially those implied by his first two natural laws, to the broader problems in the social sciences surrounding the sources of social order. As many commentators have pointed out, Hobbes's natural laws are also prudential maxims because they point the way towards peace (Warrender 1957). I shall utilize the familiar strategy matrix that has found its way into so many of the modern economic texts.

Suppose we have our two belligerents, protected by natural rock formations, threatening one another with spears hoisted high in the air. Let us name the two strategists Sam and Paul. Despite their understanding of the first natural law whose first seven words exhorts them to seek peace, neither is prepared to step out from behind the protection of the rocks to gather fish for fear the other will strike him dead and claim the entire fish harvest for himself. Indeed, the first law of nature states that when peace is unobtainable each person is allowed to use "all helps, and advantages of Warre." Furthermore, neither warrior is prepared to take a rest and fall asleep for fear that the other will sneak up behind him and kill him.

In Figure 1, I have labeled Sam's strategic choices along the rows of the table and Paul's along the columns. There is symmetry here. After mutual promises are exchanged about disarming, Sam can choose to throw down his weapons (row 1) or secretly not throw them down after lying to Paul that he has done so (row 2). At the same time, Paul can choose between column 1 and column 2. Both individuals would prefer to be in row 1, column 1 rather than in row 2, column 2, but in the state of nature there is no meaningful exchange of words or vows or much else that will make such a compromise a reality. In Figure 1, below, we see that rational self-interested behavior will lead each player to choose a safe strategy and so both players will fall into row 2, column 2. Since it is too risky for either individual to unilaterally disarm (that is, throw down his spear in a gesture of peace), the equilibrium outcome will persist despite the fact that both players would enjoy a higher standard of living if *both* were to chose row 1, column 1. Row 1, column 1 is the "cooperative solution," but without a strong sovereign power to enforce contractual agreements, a mutually advantageous cooperative pattern of behavior will remain beyond the reach of the parties.

In this one-shot prisoner's dilemma, both parties will be frustrated by their failed efforts to enhance their standard of living. Since Sam and Paul each fear death, there is no possibility that with repeated social interaction a cooperative norm can emerge such as suggested by the common folk theorem in modern game theory (Binmore 1998: 265).[9]

Figure 1



Notes: Column-player (Paul's) payoffs are above the diagonal. Row-player (Sam's) payoffs are below the diagonal.

Their tragedy boils down to the fact that neither individual trusts the other. In the SN it is better to strike first than to regret that one waited too long. In Hobbes's words:

> If a Covenant [agreement] be made, wherein neither of the parties performe presently, but trust one another; in the condition of meer Nature, (which is a condition of Warre of every man against every man,) upon any reasonable suspition, it is Voyd. . . . And therefore he which performeth

> first, does but betray himselfe to his enemy; contrary to the Right (he can never abandon) of defending his life, and means of living (Hobbes [1651] 1972: 196).[10]

By this logic Sam and Paul will languish behind the rocks, never able to enjoy the fish. The equilibrium in which they find themselves seems to be remarkably stable, quite rational, and in full conformity with the dictates of the natural laws. Indeed, at this stage in the argument Hobbes is stating quite precisely and exactly that this hellish stand-off equilibrium is what God has created for man on earth. So far, the logic of the prudential maxims leads to only this pitiful and pathetic result.[11]

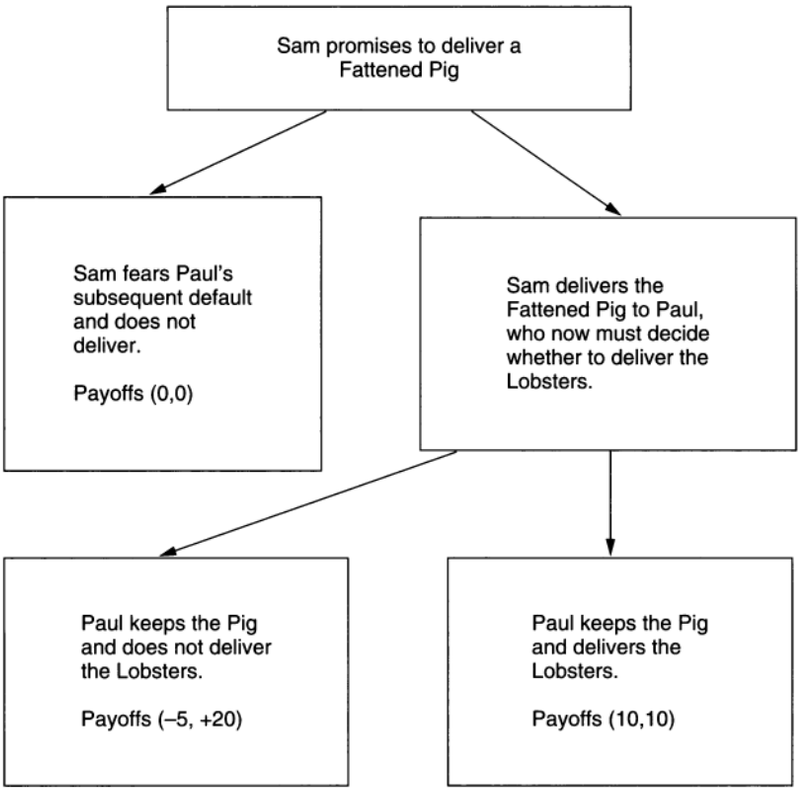
B. Extensions of the One-Shot Prisoner's Dilemma

The logic of Hobbes's version of the one-shot prisoner's dilemma can be extended with less persuasive power to other situations as well.[12] Consider a contract to exchange one pig for ten lobsters. Suppose Sam promises Paul that in three weeks' time he will deliver a fattened pig, and in exchange for that commitment Paul supplies a promise of his own. Paul promises that three weeks after Sam delivers the fattened pig, Paul will deliver ten lobsters. In Figure 2, I have outlined the strategic aspects of the transaction in extended form. Notice that if Sam goes forward and delivers the fattened pig to Paul, Sam runs the very real risk of losing his fattened pig and never getting the ten lobsters. What can Paul do to persuade Sam that the lobsters will be his if he will perform first?

Hobbes thought that, since the grounds for reneging on agreements was personal and subjective and that the background conditions were the horrific insecurities of state of nature, Sam would conjure up a multitude of "reasonable suspicions" and the contract between Sam and Paul would never get off the ground. In other words, Sam will not deliver the fattened pig.

Let us return to our fish pond example, but this time we shall increase the number of individuals from Sam and Paul to a whole collection of would-be fisherman, all hiding from each other and afraid to approach the lake because one or more of the others might throw their spears. Wouldn't it be in their mutual interests if they all could agree to throw down their spears and cooperate in some way?

Figure 2



Notes: Sam's payoff is listed to the left of the comma,
Paul's payoff is listed to the right of the comma.

Hobbes was one of the earliest thinkers to see the great difficulty with such a commonsense solution. While it might be in everyone's interest if all hostilities ceased and some rule-guided manner of exploiting the lake emerged, it is in no single individual's *personal interest* to behave in such an accommodating way. Unilateral peaceful action is just too darn risky! How can the transition from the SN to the commodious life of commerce and exchange be instituted unless and until it operates through individual self-interest?

Hobbes's third law of nature is

> That men performe their covenants made: without which, Covenants are in vain, and but Empty words; and the Right of all men to all things remaining, wee are still in the condition of Warre (Hobbes [1651] 1972: 201–202).

But despite this third law of nature exhorting people to keep their promises, contracts will collapse like a weak dam during a typhoon unless certain "validating conditions" are present (Warrender 1957: 254).

The ultimate validating condition is mutual trust, and where such mutual trust is absent there will be only voidable contracts. What is to produce the mutual trust that so often is entirely lacking in the SN? Here Hobbes called for a strong central authority—a sovereign authority to hold all men to their promises and to create the conditions for civil society and a productive economic life. Let us turn to this development in section 3, below.

III

The Creation of the Common Power

Hobbes published his *Leviathan* in English in 1651.[13] The book was intended to be a treatise on man's most remarkable creation, what he termed man's "mortall god" on earth—the sovereign state or "the *Leviathan*" (Hobbes [1651] 1972: 227).[14] Indeed, the book's frontispiece showed a multitude of individuals finally pulled together within the body of a single monarch who holds both the secular sword and the religious scepter. According to Hobbes, it was the creation of the state that made a life of wealth and peace finally possible.

The strong central power performs a number of additional functions, some of which channel the behavior of men and women into productive directions and some of which simply supply public goods and services that would not otherwise be supplied in commercial market settings. Hobbes's list of recommended government interventions is long and includes the creation and assignment of property rights; courts to effectively punish contract breaches; poor laws to assist the weak and incapacitated; laws to regulate foreign trade for the advantage of the home country; taxation of consumption

spending; and (most important) the strict supervision of university curriculum and religious activities.[15]

Hobbes's great book could not have been published at a more auspicious time—by the fall of 1640 it had become clear that the English "Parliament was determined to challenge the King's authority" and Hobbes, fearing for his own safety, relocated to Paris (Macpherson, Introduction in Hobbes [1651] 1972: 14). By 1649, King Charles I had been tried and executed and the governance of England was under the control of what was called "The Commonwealth and Free State" with residual power held by the English army. No doubt, Hobbes feared that England herself might be veering back toward something like the state of nature. In his later account of the English Civil War, *Behemoth*, Hobbes examines the causes of war and rebellion and places the blame quite squarely on religion and the plethora of religious debates—"the cause of all our late mischief" (Hobbes [1682] 1990: 55).

In 1651, he published his *Leviathan* in London and presented a copy of the book to the fugitive king and his former student, Charles II. According to C.B. Macpherson, "with the Restoration in 1660, Charles II was content to welcome Hobbes as an intellectual" (Macpherson, *Introduction* in Hobbes [1651] 1972: 14).

According to Hobbes, the state, and only a strong sovereign state, creates the conditions for men and women to live in "Peace and Unity" (Hobbes [1651] 1972: 160). The state is precisely that "common power" that keeps all bargainers to their word. The presence of a strong central power makes contracting possible and helps rational calculating natural man obtain a peaceful life of material plenty.

Hobbes envisioned a social contract in which each individual promises each other that their absolute liberty will be surrendered to a central power—the sovereign power.[16] All will submit. The sovereign power will set down the civil law specifying who owns what property and exactly what type of contractual promises will be enforceable. The sovereign invents the "rules of the game" and each individual now has a contractual obligation to adopt these rules and no other rules. Hobbes, like Locke and generations of classical liberal thinkers that followed, believed that it is the (civil) law that makes individuals free. Absolute liberty is absolutely hellish and unbearable.

It is only with law and through the law that individual liberty becomes a value worth preserving. Hobbes is a predecessor of this important line of analysis. He differs from the liberal tradition in strenuously insisting that the source of all law is the sovereign power. With the sovereign, even the original laws of nature are suspended from having any further obligatory force.

Hobbes wrote of the creation of a "commonwealth by institution," or a creation of a sovereign power by mutual agreement. Let us return to the fishing pond example. This time let us imagine that Sam and Paul have been joined by scores of individuals, all facing each other off in a state of debilitating war. If they all could agree at once to lay down their arms and install a sovereign power, then the sovereign power could establish the rules and conditions under which the fish pond is to be used, and then they could escape the brutal insecurity and poverty of the state of nature. Surely they are highly motivated to do this because they fear sudden violent death. But how can such a commonwealth by institution be created?

As a practical matter, who is naive enough to throw down his spear on the supposition that others will throw them down as well? How then can sovereignty by institution really emerge in a state of nature? If a sovereign power is needed before any contractual agreements can be viable, how can the original agreement to create a sovereign power ever come into existence?

What Hobbes called "commonwealth by acquisition" is a great deal easier to explain and understand and constitutes the practical solution to the origins problem. Hobbes offered it as a second alternative mechanism by which a strong central authority installs itself in a geographical territory. Here the conquering army comes into a village and gives the individual a choice: swear allegiance to the new conquerors or be slaughtered. Many will make a promise to obey out of fear of violent death. This, Hobbes insists, is a valid explanation of how moral obligation comes about. It is similar to sovereignty by institution in that both methods of establishing sovereignty are motivated by fear of violent death and both methods produce a more desirable outcome than the SN.[17]

Hobbes's "social contract" theory has received bad press. Later thinkers such as David Hume ridiculed the idea that there has been a

time in the past when individuals gathered and installed a strong central power (Hume [1742] 1985: 465–487). But Hobbes's analysis of how the state comes into existence was not intended to be a literal description. Its purpose was to provide a template for assessing the mutual rights and obligations that exist between ruler and ruled. It is, in the true sense of the expression, a "thought experiment." As an empirical matter, sovereignty probably did arise by "acquisition" and not by "institution," but it is in exploring the logic of the latter that we learn about the nature and extent of the political obligations implied by the former.

The practical lesson of Hobbes's analysis is that men and women should support whatever sovereign power is over them because a civil war might risk an awful detour back through the state of nature in which life is miserable and impoverished (Buchanan 1975). It is of course true that Hobbes was a friend of strong sovereign power but he was a friend of sovereign power only because the alternative was substantially more horrifying.

IV

Hobbes and Economic Reasoning

I shall attempt to answer two questions in this section. First, in what way can we characterize Hobbes's analysis as economic analysis as distinct from moral philosophy? Is his approach one that reflects economic ideas and issues as we understand them today? Second, if Hobbes offered an essentially economic analysis of one sort or another, was the modeling construct of "economic man"—homo economicus—an essential part of that model?

It is clear that Hobbes starts *Leviathan* with a discussion of human deliberation and human action. His forays into what we might today describe as motivational psychology are insightful. We learn that it is passion that motivates individuals to action. Self-promotion and self-glorification are powerful motivators for the acting agents. Indeed, human nature consists for Hobbes of an unrelenting quest for power, by which Hobbes meant "present means to obtain some future apparent good" (Hobbes [1651] 1972: 150).[18] In his *Leviathan* and also in his later writings, Hobbes insists that men and woman are gullible and

easily misled by sophists, University professors, religious zealots and other mountebanks. This means that individuals are not always the best judges of their interests. In addition, individuals remain spiteful and vindictive beyond what is necessary to achieve any calculated end (Holmes 1990: xvi). In one place the acting individual is described as myopic and deficient in his or her ability to consider the long-run consequences of the sovereign's behavior when taxes are assessed in order to prevent a future enemy victory (Hobbes [1651] 1972: 239). For example, myopic man balks at having to pay taxes that are really in his long-run interest.

At other places in Hobbes's writings we encounter an early anticipation of homo economicus. In *Leviathan*, Hobbes explains that individuals reason or deliberate about problems in a quantitative manner. They calculate or reckon by considering a positive argument in favor of some course of action and then a negative argument and then back again to another positive, and so on. This continues as part of what he called "deliberation." Deliberation is the scoring of the pros and cons until the will to act arises and human action finally takes place (Hobbes [1651] 1972: 126–127).[19] When the individual acts and chooses a certain course of action, it is only because he identifies that action with net positive gain.

At one place, Hobbes explains that a "coer cive power [is needed] to compell men equally to the performance of their Covenants [or promises], by the terrour of some punishment, greater than the benefit [that] they expect by the breach of their Covenant [or promises] . . ." (Hobbes [1651] 1972: 202). The emphasis here is on rational calculation and comparing and weighing of benefits and costs prior to making a decision. Although it is the individual's passions (or emotions) that motivate him or her toward action in the first place, in these passages Hobbesian man, once motivated to act, acts in an entirely rational and calculating manner. Here Hobbes anticipates the approach of modern orthodox economics by modeling individuals as essentially "problem solvers" or optimizers.

Another important thread of analysis that is taught in the opening chapters of *Leviathan* is how a multitude of quarreling and distrustful individuals gets reshaped into a modern prosperous community. How in its simplest terms can Sam ever come to possess enough trust in

Paul's behavior to interact with him in ways that lead to a division of labor and rising living standards? By what words or gestures could Paul ever instill such trust in Sam? Where subsequent thinkers argued that in small communities conventions and reciprocity could easily establish the foundations for a commodious social order, Hobbes did not emphasize this possibility (Moss 1991). With the exception of times of extreme emergency when an enemy is pounding away at the gates and individuals spontaneously organize for self-protection, collective action in the state of nature will not persist (Hobbes [1650] 1928: 78–79). Cooperation in the state of nature always remains an exception rather than the rule.

It stayed a prudential maxim in Hobbes's world that it is better to strike first on the slightest possibility that your neighbor might strike you first. Such distrust creates a world of short-term posturing and anything resembling even a simple market economy is impossible.[20]

But the society in which we live does enjoy arts, letters, industry, agriculture and transportation services. The challenge of social science is to explain the origins of that social order. Hobbes responded to that challenge by offering what is now termed a "comparative institutional analysis" (Buchanan [1987]). By comparative institutional analysis, Hobbes compares the deliberative process both in the absence and then in the presence of a strong central power to hold men to their promises. In the absence of the sovereign, promises are not kept and economically advantageous trades do not take place. In the presence of the sovereign, a market system is possible along with a division of labor and specialized trading.

According to Hobbes, the sovereign power performs many "natural functions," but one function it does not perform is that of changing human nature. What changes is only the ways in which individual behave under the umbrella of a strong central authority creating and enforcing the civil law. This enforcement removes the fundamental mistrust that adheres in the state of nature and the rational actor now *calculates* that keeping promises makes sense. We appreciate the stabilizing functions of the sovereign power by imagining a world in which sovereign power is absent.

The thought experiment approach to comparing institutions that we find in Hobbes's writings is deeply rooted in the history of science. In

economics the thought experiment has enjoyed a particularly respected place in the writings of the Austrian school writers (Moss 1997). Hobbes gave the thought experiment pride of place in his *Leviathan*, and that is why his analysis has such a modern sound to it.

Hobbes's presentation of this comparative institutional argument also bears an unmistakable resemblance to methods that Galileo and others used in the first part of the seventeenth century to analyze motion. In his *Dialogue On the Great World Systems* (1632), Galileo, in a remarkable thought experiment, decomposed a complex phenomena into its parts and then recombined those parts to arrive at a final explanation. This method was especially effective when examining the motion (more properly, trajectory) of a cannonball. A cannonball shot out from the mouth of the cannon at a certain speed would continue to travel at that speed unless acted on by a different force. The force that instantly acts on the cannonball is that of gravity tugging the ball to the earth. The interaction of the inertial force and the gravitational force produces a parabolic trajectory (Moss 1977; Cruse and Granberg 1971: 343–347).

Again, the movement of the cannonball is first decomposed into two elementary forces: namely, inertia and gravitational "pull." These two forces are then combined (actually simply added together) and the net effect (an equation) describes the trajectory of the cannonball. This method of analysis has been referred to as the "resolutive-compositive" method (Watkins 1965). Hobbes was a great admirer of Galileo and consciously borrowed his ideas about the new physics of motion and applied them in his political philosophy (Spragens 1973; Jesseph 1999: 107–108 and 238–240).

In 1908, this strand of the Galilean approach had become so firmly identified with the discipline of economics that Joseph A. Schumpeter coined a phrase to describe it that has stuck (Schumpeter [1908] 1970: 88–98). In economics we follow Schumpeter and speak of "methodological individualism," meaning the analytic reduction of complex phenomena to the behavior of the acting agents whose interactions gave rise to the phenomena in the first place. Members of the older Austrian school, especially Ludwig von Mises, in the twentieth century advocated methodological individualism as an important method of investigation in economics (von Mises [1949] 1998: 42–43). Hobbes

can be credited with having used something that closely resembles this method in his *Leviathan* when describing problems of interest to contemporary social scientists. That was 300 years before von Mises!

I have argued that Hobbes's texts be read as exemplars for both comparative institutional analysis and methodological individualism in economics. Can we take the next step and assert that Hobbes's quarreling individuals behave as the legendary "homo economicus" who appears so centrally in the classical school literature of the late eighteenth and nineteenth centuries? Did Hobbes assume that individuals always seek their own interests where the content of their interest is wealth maximization? As John Stuart Mill explained, "there is . . . one large class of social phenomena, in which the immediately determining causes are principally those which act through the desire of wealth; and in which the psychological law mainly concerned is the familiar one, that a greater gain is preferred to a smaller" (Mill, [1843] 1981, 2: 901). Did Hobbes use the homo economicus or wealth maximization assumption in his writings?

In the SN force and fraud are certainly the cardinal virtues, and this implies a primitive vision of a homo economicus who is selfish, vile, diabolical and deceptively calculating. Surely, Hobbes did not hold to this version of the homo economicus assumption in any consistent way. In other writings, he points out how easily individuals are roused into furious emotional states and behave in ways bordering on the irrational (Hobbes [1682] 1990; Holmes 1990).

Still, Hobbes insists that what motivates individuals to find a way out of the state of nature is their fear of death and the need to live a commodious life. It is not raw biological survival that they crave but a life of comfort. Warrender summarizes Hobbes's position as follows: men and women are "seeking peace [and this goal is reached] not simply finding security for one's life, but a stable framework for living well" (Warrender 1957: 219). In Hobbes's last work, *Behemoth*, describing the irrational behavior during the English civil war, he identifies a subset of subjects who are wealthy and "have made themselves so by craft and trade, as men that never look upon anything but their present profit" (Hobbes [1682] 1990: 142). This is an early germ of the homo economicus assumption but it is not applied to all citizens. Indeed, the rich craftsmen are presented in contrast to

many other English citizens living during the turbulent English civil war. There were many who pursued malice and spiteful acts of vengeance despite what a calm calculation of self-interest might have required of them (Holmes 1990).

It is clear that some individuals sometimes behave in the fashion of homo economicus. Consider one of Hobbes's signature contributions to the field of economics called "public economics." Hobbes insisted that it is each and every individual's duty to pay taxes to the sovereign, because this is the price that needs to be paid for the services provided. Hobbes explained,

> . . . the Impositions that are layd on the People by their Sovereign Power, are nothing else but the Wages, due to them that hold the publique Sword, to defend private men in the exercise of severall Trades, and Callings (Hobbes [1651] 1972: 386).

Hobbes goes on to argue that the taxes should be tied in some way to the benefits received from living under the social order provided by the sovereign power. According to Hobbes,

> . . . the Equality of Imposition, consisteth rather in the Equality of that which is consumed, than of the riches of the persons that consume the same (Hobbes [1651] 1972: 386).

In practical terms, only items of consumption should be taxed.

This means that income earnings that were not spent on consumption would escape taxation. In modern analysis, to tax an object is to discourage that activity by inducing the rational actor to optimize his situation by demanding less of the taxed object and more of the untaxed object. Under Hobbes's scheme, what was subsequently called "saving" is the source of capital goods construction and productivity gains (Jackson, 1969). Did Hobbes advocate the favored tax treatment of non-consumption expenditure to encourage economic development? I remain skeptical that Hobbes intentionally advocated a tax on consumption expenditure because he wished to encourage saving over consumption. It is pure conjecture that Hobbes thought in these terms. His argument that those who consume more should pay more taxes, is strictly a fairness argument that those who "use" the Commonwealth more should pay more (Hobbes [1651] 1972: 387).

The Hobbesian individual is certainly not the homo economicus that we find in the writings of the later classical school. For example,

John Stuart Mill explained that the phenomena of the social sciences depend on a "concurrence of causes," and that it is permissible and necessary that certain causes be studied in isolation from the rest.[21] One such cause is the human motive to acquire and consume "wealth." Mill saw no problem in developing a logical body of analysis around a model in which the actors were assumed to be guided by one simple motive of wealth accumulation. According to Mill, "the political economist inquires, what are the actions which would be produced by this desire, if within the departments in question it were unimpeded by any other [motive]" (Mill 1874 [1844]: 139–140).

But there are other motives regarding wealth that Mill did not emphasize. Consider Hobbes's description of the quarrelsome individual who always compares his wealth to others and takes vain pride in having more than the others. The Hobbesian individual craves a life of security, economic comfort and also "power." It turns out that another classical writer, Nassau Senior, wrote in 1836 that "to seem more rich, or, to use a common expression, to keep up a better appearance, than those within their own sphere of comparison, is, with almost all men who are placed beyond the fear of actual want, the ruling principle of conduct" (Senior [1836] 1965: 12).[22] Here Senior points to an important motive behind economic behavior, which is the quest for "distinction." Senior's particular notion of homo economicus is in direct line of descent from Hobbes because it is relative wealth comparisons that are the main motivator behind human action. At best we conclude that Hobbes was an early anticipator of economic ideas that became more prominent centuries later.

V

Place in the History of Economics

Elsewhere, I have argued that the field of public choice economics might very well claim Hobbes to be an early cofounder (Moss, 1977: 256–272). In that paper, I took notice of the ways in which Hobbes's methodology anticipates methods of analysis that subsequently became prominent in economics. Here, I have covered some of the same ground. I have argued first that Hobbes conducted a comparative institutional analysis in order to persuade his audience about the

importance of a strong central government. Second, Hobbes was a methodological individualist when he decomposed large problems of collective behavior into an analysis of individual rational behavior and then built it back up to collective behavior. Finally, in certain places in his work, Hobbes anticipated the homo economicus approach that became an important modeling assumption of the later classical school writers and survives today in modern analysis.

Hobbes applied some of the methods that later proved valuable in economics to an important problem in the social sciences—the problem of social order. It is clear that not everyone can be persuaded by Hobbes's analysis. Among our contemporaries, the late songwriter John Lennon imagined a world very different from the one that Hobbes imagined. Lennon's world is populated with peaceful and non-acquisitive agents, sort of a homo romanticus to contrast with Hobbes's early presentations of homo economicus. While the logic of the one-shot prisoner's dilemma may no longer have the persuasive power that it had for Hobbes in his masterwork *Leviathan*, we must recognize Hobbes as a pioneer modeler in economics employing methods that have subsequently proved valuable to the discipline.

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Notes

1. I want to thank Professors Anthony Waterman, Tetsuo Taka, Yasunori Fukagai and two anonymous referees for their criticisms and suggestions. I remain responsible for any errors that remain.

2. The Romantic tradition in the social sciences holds that standing between man and the more desirable world of peace and plenty are a plethora of corrupt institutions that only need to be removed. Members of that tradition include William Godwin and J.J. Rousseau.

3. Among modern writers, the challenge has been to see how many real world phenomena can be explained or "accounted for" by assuming the actors involved have the same preferences but behave differently (only) because the constraints under which they make decisions have changed. See George J. Stigler and Gary S. Becker, "De Gustibus Non Est Disputandum," *American Economic Review* 67 (1977): 76–90. In Hobbes's model, human nature remains the same but peaceful behavior emerges when there is a sovereign body to hold everyone to their promises. See the discussion below.

4. There are varying definitions of the homo economicus assumption in the literature. In this article I shall use the term as John Stuart Mill used it: Homo economicus is motivated to act so as to increase his/her wealth (or net worth). Hobbes's economic man is all this and more. He/she tries to increase his/her wealth *relative* to others and this would permit vengeful and sacrificial acts as well. I conclude below that Hobbes only pointed the way toward the later classical school formulation. I might point out that the term homo economicus is also used in the literature to refer to all self-seeking behavior and even selfish behavior regardless of whether or not it is directed toward the accumulation of wealth. I shall not use the term this way here.

5. In Moss (1977) I emphasized the "game theoretic" foundations of Hobbes's argument. What I did not emphasize was that Hobbes's Prisoner's Dilemma model was of the "one shot" variety. This means that should someone play the game and lose, there would be no second or third game to follow. To "lose" means "to lose one's life." On the origin of the terminology, that is, on the origins of the expression "Prisoner's Dilemma," see Poundstone (1992).

6. Hobbes wrote as follows: "So that in the nature of man, we find three principall causes of quarrel. First, Competition; Secondly, Diffidence; Thirdly, Glory. The first, maketh men invade for Gain; the second, for Safety; and the third, for Reputation. The first use Violence, to make themselves Masters of other mens persons, wives, children, and cattell; the second, to defend them; the third, for trifles, as a word, a smile, a different opinion, and any other signe of undervalue, either direct in their Persons, or by reflexion in their Kindred, their Friends, their Nation, their Profession, or their Name" (Hobbes [1651] 1972: 185).

7. With many exceptional passages, I would describe chapters 31 through 47 as consisting mostly of theological or scriptural interest. In the Penguin edition this covers approximately 320 pages out of 715 pages-about 50 percent of *Leviathan*.

8. Hobbes wrote in *Leviathan*: "a Covenant not to defend my selfe from force, by force, is alwayes voyd. For (as I have shewed before) no man can transferre, or lay down his Right to save himselfe from Death, Wounds, and Imprisonment (the avoyding whereof is the onely End of laying down any Right, and therefore the promise of not resisting force, in no Covenant transferreth any right; nor is obliging. For though a man may Covenant thus, *Unless I do so, or so, kill me*; he cannot Covenant thus, *Unlesse I do so, or so, I will not resist you, when you come to kill me*. For man by nature chooseth the lesser evill, which is danger of death in resisting; rather than the greater, which is certain and present death in not resisting" (Hobbes [1651] 1972: 199).

9. According to Binmore, "[this] result is therefore now called the folk theorem because nobody knows to whom it should properly be attributed. It

says that all interesting outcomes in the cooperative payoff region of a one-shot game are also available as equilibria in an indefinitely repeated version of the game. We therefore do not need a philosopher-king to enforce contracts in repeated situations. There is nothing an external enforcement agency can do for us that we cannot do for ourselves" (Binmore 1998: 265).

10. The careful reader might have noticed that Hobbes claims the agreement is "void." That is because his focus is on moral obligation and in this Prisoner's Dilemma situation as we have described it above, no moral obligation exists to bind either party because of the absence of a strong central contract enforcing authority. Our emphasis here is on economic behavior. Since rational economic agents can foresee that promises made in this manner will be void, they will act rationally by not even bothering to try to establish such agreements in the first place.

11. Hobbes's claim that God's natural laws actually counsel a situation in which absolute morality ceases to exist has been taken by some as evidence that Hobbes's beliefs in God and religion were really just a pretext to cover up atheism in an age when it was dangerous to be a confessed atheist (see Jesseph 1999: 330).

12. In the example that follows, we are no longer dealing with life or death choices. In the analysis of exchange it is possible that after several iterations the parties will settle down and adopt an honesty convention. Hobbes did not consider this possibility and it remained for David Hume to more properly extend the analysis in this direction (see Binmore, 1998: 263–326).

13. Hobbes published a Latin edition of *Leviathan* in 1670 that was substantially unchanged except for the correction of certain mistakes in the exposition of the religious doctrines (Bobbio Norberto 1993: 27).

14. One writer has argued that Hobbes chose the title of the book itself to finally answer God's question to Job about what man has done on earth to compare to what God accomplished at creation. In the Bible, Job had no answer and admitted the inferior status of men and women to God. Unlike Job, Hobbes does have an answer: the institution of a sovereign power on earth that makes all other forms of social life possible is the great legacy of acting men and women. It is the *Leviathan*—the moral God on earth-that make everything else that is important to civilization possible (Jacobson, 1971).

15. Hobbes's discussion of the functions of the state or "sovereign representative" that could be a single person such as a monarch or an assembly of citizens is in chapter 30 of the *Leviathan* (Hobbes [1651] 1972: 376–394).

16. According to Hobbes, the sovereign is not a proper part of the social contract. All the members of the community agree among themselves to obey "the sovereign power" who stands outside the agreement and has made no promises to the consenting parties. The parties have agreed with each other

to lay down their claims to all objects and submit instead to the civil law about to be constructed by the sovereign power (Hobbes [1651] 1972: 230).

17. Hobbes argues in other places that contracts entered into out of fear are not invalidated for that reason. The modern trend in civil law is to invalidate contracts entered into out of fear. For Hobbes, it was fear and fear itself that motivated individuals to create the nation-state and its civil laws.

18. Hobbes wrote "so that in the first place, I put for a generall inclination of all mankind, a perpetual] and restlesse desire of Power after power, that ceaseth onely in Death" (Hobbes [1651] 1972: 161).

19. Hobbes wrote: "Out of all which we may define, (that is to say determine,) what that is, which is meant by this word *Reason*, when wee reckon it amongst the Faculties of the mind. For Reason, in this sense, is nothing but *Reckoning* (that is, Adding and Subtracting) of the Consequences of generall names agreed upon, for the *marking* and *signifying* of our thoughts; I say *marking* them, when we *reckon* by ourselves; and *signifying*, when we demonstrate, or approve our reckonings to other men" (Hobbes [1651] 1972: 111).

20. As Hobbes explains, there is no place for industry in the SN. In modern terms, productivity is pitifully low. Why invest when the security of retaining your possessions is virtually nonexistent? Surely agriculture and the associated arts will be practically nonexistent and the carrying trade and mapmaking will be unheard of. The arts and social institutions will languish as well. Hobbes explains:

> In [the state of nature] there is no place for Industry; because the fruit thereof is uncertain: and consequently no Culture of the Earth; no Navigation, nor use of commodities that may be imported by Sea; no commodious Building; no Instruments of moving, and removing such things as require much force; no Knowledge of the face of the Earth, no account of Time; no Arts; no Letters; no Society; and which is the worst of all, continuall feare, and danger of violent death (Hobbes [1651] 1972: 186).

21. Mill wrote as follows: "when an effect depends upon a concurrence of causes, those causes must be studied one at a time, and their laws separately investigated, if we wish, through the causes, to obtain the power of either predicting or controlling the effect, since the law of the effect is compounded of the laws of all the causes which determine it" (Mill [1844] 1874: 139).

22. In addition to power, Senior listed distinction, leisure, benefits for acquaintances and friends and even contributions to the public as powerful motivations of human action (Machlup 1973: 99).

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