

**A** cynic is someone who knows the price of everything and the value of nothing.  
Oscar Wilde [1854-1900]

## Chapter 3

# THE EVOLUTION OF MICROECONOMIC THOUGHT

In every society, choices must be made about what things should be produced, how they should be produced and who should get them. Even Daniel Defoe's [1659-1731] *Robinson Crusoe* [1719] must choose how the resources available to him are to be allocated. With the appearance Friday, the problem becomes more complex. Since humans tend to be social animals they must devise processes and institutions to coordinate and integrate individual behavior within the context of their societies. From the Greeks to the present, in documents from the world's great and not so great religions to writings that profess to be amoral, the topics of how these choices are made and how resources are allocated have been debated.

Economic theory is not a static body of "truths." Rather, it is an expression of a perspective about economic activities during a particular historical period. While the body of economic theory influences the course of history, it is at the same time shaped by the forces of history. The economic activities in each society and the economic explanations and justifications of those activities are guided by beliefs, values, ideologies and technology prevalent in that society.

Microeconomics is the study of decisions, relationships and behavioral patterns of individuals, families, organizations (firms, not-for-profit organizations, etc), **industries** and **markets**. At one level, microeconomics may be used as a tool to aid in the decision making process. It may be used as a tool to optimize some economic variable such as to maximize utility, benefits, profits, net return, or to minimize some variable such as cost per unit. At another level, economics is a social science that provides the context to understand and interpret the world about us; it makes it possible to evaluate the current state of our world and to speculate on ways that it might be improved; it is an important aspect of our education. It is a tool to evaluate values, **policies** and the **institutions** of an economic system. Critical analysis and evaluation require a philosophical and historical context to compare and contrast alternatives.

## **PREINDUSTRIAL ECONOMICS**

History is a continuum that is divided up into periods for the convenience of historians. In very general terms, we might divide the history of economic thought into three general periods; one being the preindustrial period, another encompasses the rise of science and industrial mentality, and a third period that is the modern era. Religion

played a more obvious role in economic thought during the preindustrial period however, Judeo-Christian thought has contributed much to the foundations of economic thought in the West. During the Middle Ages, economic thought was influenced by the process of reconciling the religious teachings of the old and new testaments with the secular teachings of Aristotle.

## JUDEO-CHRISTIAN INFLUENCE

Economic thought of the Hebrews was primarily expressed as laws or rules of conduct. Christianity grew out of the traditions of Judaic law and consequently many attitudes about appropriate economic behavior are similar. Ideas about labour, wages, property rights, just prices, usury, taxation, debt, monopoly power as well as weights and measures must be inferred from the rules that were expressed in the scriptures.

### Labour and Wages

Labour was regarded as honourable. Labour in agricultural pursuits was seen from a particularly favorable perspective. Workers were to be treated with respect and paid daily. Idleness was

## GREEKS

The Greeks are often regarded as the first important contributors to Western culture. While archeology continually discovers new information, it is commonly believed that the early man evolved in Africa and began making primitive tools 2.6 million years ago. [Burke, p 10] The civilizations that are linked to the West began as early as 8000 BCE in the area between the east end of the Mediterranean Sea and valleys of the Tigris and Euphrates Rivers. Between 1200 BCE and 200 BCE the Classical Greek civilization developed and flourished. The Greeks lived in city-states and sustained a level of economic development not surpassed until the 12<sup>th</sup> or 13<sup>th</sup> century in Europe. [Cameron, p 32] There were many factors that contributed to their success. In addition to resources, weather and location, the attitude of the Greeks toward knowledge and philosophy contributed to their development.

Athens and Sparta were two major city-states in the Greek world. Athens is best known as a centre of philosophy and the birthplace of democracy. Athens built an empire and was economically successful. Sparta defeated Athens [404 BCE] in the Peloponnesian War [431-404 BCE] however, Athenian democracy survived. [Garraty, p 175] The Athenians held "*ideals of freedom in private life, equality of opportunity to hold public office, and an education which sought to produce adaptability rather than to perpetuate a pattern.*" [Ibid. p 176] Greek thought on economics tended to be grounded in perceptions of justice and morality.

The Greek economy was agrarian and had a strong military. Production tended to be organized on large landed estates, *latifundium* (Latin term). The production of some goods (slaughter of animals) and prices (salt) were regulated and as well as trade in

some goods (wheat). [Haney, p 59] It must be noted that slavery was an institution that was common in Greek city-states. There may have been as much as one-third of the population that were slaves.

### Socrates [468-399BCE]

Socrates was a poor stone mason and carver who believed it his divine mission to test the truthfulness of all statements. [Plato, 1956,W.H.D.Rouse in the *Preface*] There were no writings left by Socrates for us to learn his views on economics. His contributions were through the students he educated and their works. In Athens Socrates had a number of students, among the most important were Plato [427-347 BCE] and Xenophon [430-355 BCE]. Both contributed to economic thought. Plato in turn helped a student, Aristotle [384-322 BCE] whose writings served as the basis for philosophy during the middle ages.

### Plato [427-347 BCE]

Plato began his *Republic* with an economic interpretation of history. He begins by seeking the meaning of justice. In dialogue between Socrates and Thrasymachos, Plato describes a search that seeks justice in an individual or micro level. This proves difficult so they seek justice at the social or macro level;

*"Then perhaps there would be a larger justice in the city and easier to understand. If you like, then, let us enquire first what it is in the cities; then we will examine it in the single man, looking for the likeness of the larger in the shape of the smaller."* [Plato, p 165]

The search for justice in society requires an assessment of the nature of the city-state and society. The need for social organization is rooted in economics;

*"A city, I take it, comes into being because each of us is not self-sufficient but needs many things. Can you think any other beginning could found a city? 'No' said he."* [I bid.]

Justice and the origins of the city-state (which constituted society) is then found in each person doing that which they are best suited;

*"Justice is that very thing, I think, or some form of it, which we laid down at first when we were founding the city, as necessary conduct in everything from beginning to end. And what we did lay down and often repeated, if you remember, was that each one must practice that one thing, of all in the city, for which his nature is best fitted."* [Plato, p 232]

This **specialization** is the reason for and justification of society. Plato's conception of specialization should not be confused with the **division of labour**. Specialization is a division of crafts and skills among different people. The craft or skill lies in the person;

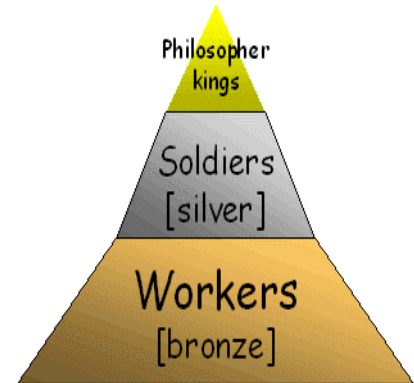
*"No other tool will ever make one a craftsman or athlete by just picking it up, and it will be useless for one who has not acquired its science and has not given it enough practice. [Plato, p 171]*

Specialization allows the individual to learn and perfect their knowledge and skills in an art or practice as well as increasing the production of material things. Specialization results in increased production because the individual has become more knowledgeable about their craft. The division of labour divides a craft into smaller tasks. Experience, knowledge and skill of the individual become less important. Production may increase while the role of each individual shifts from craftsmanship in an occupation to skills in the performance of a task. The division of labour becomes of more important during the development of modern industry. Increased in productivity occurs as a function of social knowledge, coordination and integration of human effort and organizational control rather than at the individual level. Adam Smith [1723-1790] identifies the division of labour as a primary source of increased productivity and the *Wealth of Nations* [1776].

For Plato, specialization has two effects. First it increases output and improves the welfare of individuals in society by producing more goods and services. Second, it is a component of justice. Specialization promotes the improvement of the individual by encouraging the development of the individuals craft and knowledge about that craft. The division of labour increases output but it may do so at the expense of the individual welfare. Smith recognizes this in the *Wealth of Nations* when he writes;

*"In the progress of the division of labour, the employment of the far greater part of those who live by labour, that is, of the great body of the people, comes to be confined to a few very simple operations, frequently one or two. But the understandings of the greater part of men are necessarily formed by their ordinary employments. The man whose whole life is spent in performing a few simple operations, of which the effects too are, perhaps, always the same, or very nearly the same, has no occasion to exert his understanding, or to exercise his invention in finding out expedients for removing difficulties which never occur. He naturally loses, therefore, the habit of such exertion, and generally becomes as stupid and ignorant as it is possible for a human creature to become. The torpor of his mind renders him, not only incapable of relishing or bearing a part in any rational conversation, but of conceiving any generous, noble, or tender sentiment, and consequently of forming any just judgement concerning many even of the ordinary duties of private life."* [Smith, *MN*, p 734]

Once Plato has linked justice with each person doing that for "*which his nature is best fitted,*" individuals are not (and cannot be) self-sufficient; humans must coordinate their activities to facilitate the carpenter building houses, shepherds raising sheep and weavers making cloth; interpersonal relationships within a society are necessary. For Plato, this society is authoritarian. He divides society into three groups with the "perfect guardians", rulers or "philosopher kings" (gold) responsible for ruling. The "auxiliary guardians", warriors or soldiers (silver) must protect society and aid in the administration of order while the workers, farmers artisans or traders (bronze) produce goods and services. Justice exists when each group does those things that are in their nature. Plato does allow for some mobility for individuals with exceptional ability. Slavery was accepted by Plato as a permanent characteristic of society. Slaves tended to be individuals who were captured during war.



Virtue, justice and knowledge were closely related. For a moral and just society, rule must be put in the hands of philosophers. To insure that the "guardians" were not distracted from their duties of identifying morality (perfect guardians) and enforcing domestic order (auxiliary guardians), property wives and children were to be held in common by those classes in Plato's ideal state.

### [Aristotle](#) [384-322 BCE]

Aristotle [384-322 BCE] divided the concerns of economics into two separate fields; one was *oikonomiks* the other *chrematistiks*. *Oikonomiks* dealt with the production and consumption of goods while *chrematistiks* encompassed the activities of money making as well as some aspects of production. *Oikonomiks* was an analysis of how decisions were made regarding the management of resources. *Chrematistiks* studied human activities involved with "wealth-getting" which could be unnatural as well as natural. "Money-making" for its own sake through exchange was seen by Aristotle as unnatural. [Aristotle, *The Politics*, pp. 38-42] Aristotle's view of economics was shaped by the society he observed. There were large numbers of slaves and fewer freemen. The freemen were craftsmen, artisans, herdsmen, statesmen and the landowners. Economic activity was primarily agrarian (*Oikonomiks* translated literally means "household management" which referred to the *latifunda* or large landed estate) with some exchange. The development and use of money to simplify barter was in its early stages. Consequently, Aristotle's interest in justice, economics and social stability lead him to conclude that some economic activities were unnatural and undesirable. He believed that money was "barren" and that usury was unjust. Value was divided into "value in use" and "value in exchange." There was a "just price" and merchants who made money by "buying

cheap" and "selling dear" were engaging in undesirable activities. Because Aristotle observed a society where there was little economic growth or change, he viewed economics as a process of distributing a fixed sum. As a result, his economics focused on the ethics of economic behavior and the concept of justice. In isolated exchanges, he recognized that the justice of a transaction was dependent on the information held by the buyer and seller.

Because Aristotle was writing at a time that money and financial instruments were in their formative stage he made a clear distinction between the activities that involved "real" things and those that were pecuniary or monetary. While the two activities are related, he saw them as fundamentally different. In the modern world observers often confuse the two. It is often not clear whether an economic unit is making goods or making money or both.

## **ROMANS**

Over the centuries writers concerned themselves with justice and moral choices in the economic realm. The Romans and the Scholastics were also faced with societies where economic growth was not seen as the most important facet of economic life. They too, were concerned with how society made economic choices and to what extent these choices were "just."

## **FEUDAL**

With the development of new technologies in ships and navigation, Europeans began to expand the range of their travel and their ideas. As spices, silk and other goods from the East became more important in European societies, the focus of economics shifted to explain and justify the expanded trade. The ideas of usury were modified and money was no longer considered "barren." It was no longer considered a sin to "buy cheap" and "sell dear."

## **MERCANTILISM**

With the rise of nation states and expanded trade, economic thought was restructured to deal with these forces. Mercantilism (or Kameralism in Germany and Colbertism in France) provided a justification for and explanation of the activities of the rising merchant class. Trade was seen as the source of national wealth. The accumulation of bullion was the objective of trade and was to be accomplished by a "favorable balance of trade" (i.e. exports of a nation were to exceed the imports and the balance taken in gold or silver), or the exercise of national power. This led to a new role for governments; the regulation of trade and economic activities. It also promoted a perspective that focused on material things and a philosophy to explain and justify that focus.

Mercantilism was not without its problems. Its success, particularly in Spain led to the discovery of the "quantity theory of money" and inflation. Excesses in regulation and inflation ultimately lead to a re-evaluation of economic thought.

## PHYSIOCRATS

### [François Quesnay](#) [1694-1774]

One of the most notable reactions against the excesses of Mercantilism, or in this case Colbertism, was the Physiocrats in France. Led by François Quesnay [1694-1774], the Physiocrats constructed the foundation for market oriented economics. Quesnay's *Tableau économique* stressed the concept of an economic system with interdependence of all sectors of the economy and the idea of the "flow" of money and goods through the economic system.

### [Anne Robert Jacques Turgot](#) [1727-1781]

Adam Smith was acquainted with the Physiocrats and was influenced by their work.

## THE INDUSTRIAL REVOLUTION AND CLASSICAL ECONOMICS

### RICHARD CANTILLON [1680-1734]

### ADAM SMITH [1723-1790]

Adam Smith [1723-1790], who is recognized by many as the founder of the Classical School, constructed an explanation of how social behavior is regulated. Like Aristotle, Smith's view of economics was shaped by the world he observed. In the mid-1700's Smith's England and Scotland were in the early stages of the industrial revolution. He observed a world of many shopkeepers, small manufacturers and farmers. Technological change was making many of the traditional solutions to economic problems less functional. Products were not complicated and consumers had information about which goods were available and what the quality was. Smith saw a world where each person sought their own self interest but was constrained by morality, markets and government. First,

Smith developed an analysis of the moral system (*The Theory of Moral Sentiments*, 1759), then an economic system (*The Wealth of Nations*, 1776). He spent the last years of his life working on the system of jurisprudence. A manuscript on jurisprudence, along with several other papers was burned at his request because he did not consider it "finished" prior to his death. [Stewart, pp 73-74] We have copies of students' notes taken in his lectures on jurisprudence so his ideas are still available to us. This three-legged system of Smith's was a means by which individual behavior was

directed into patterns that were not detrimental to society. The primary goals of the system were to provide social stability (which is dependent on "justice") and to promote economic growth. Smith's desire for stability and justice was shown in his own words:

*"It is thus that man, who can subsist only in society, was fitted by nature to that situation for which he was made. All the members of human society stand in need of each other's assistance, and are likewise exposed to mutual injuries. Where the necessary assistance is reciprocally afforded from love, from gratitude, from friendship, and esteem, the society flourishes and is happy. All the different members of it are bound together by the agreeable bands of love and affection, and are, as it were, drawn to one common centre of mutual good offices.*

*But though the necessary assistance should not be afforded from such generous and disinterested motives, though among the different members of the society there should be no mutual love and affection, the society, though less happy and agreeable, will not necessarily be dissolved. Society may subsist among different men, as among different merchants, from a sense of its utility, without any mutual love or affection; and though no man in it should owe any obligation, or be bound in gratitude to any other, it may still be upheld by a mercenary exchange of good offices according to an agreed valuation.*

*Society, however, cannot subsist among those who are at all times ready to hurt and injure one another. The moment that injury begins, the moment that mutual resentment and animosity take place, all the bands of it are broken asunder, and the different members of which it consisted, are, as it were, dissipated and scattered abroad by the violence and opposition of their discordant affections. If there is any society among robbers and murderers, they must at least, according to the trite observation, abstain from robbing and murdering one another. Beneficence, therefore, is less essential to the existence of society than justice. Society may subsist, though not in the most comfortable state, without beneficence; but the prevalence of injustice must utterly destroy it." [Smith, TMS, pp. 166-167]*

Smith argued that man was by nature self-interested. This is not to be confused with selfishness. The individual would pursue their own self interest but at the first level the moral system, directed largely by sympathy, would restrain inappropriate or unjust behavior. However, Smith argued that our moral sentiments could be corrupted;

*"This disposition to admire, and almost to worship, the rich and the powerful, and to despise, or at least, to neglect, persons of poor and*

*mean condition, though necessary both to establish and to maintain the distinction of ranks and the order of society, is, at the same time, the great and most universal cause of the corruption of our moral sentiments. That wealth and greatness are often regarded with the respect and admiration which are due only to wisdom and virtue; and that the contempt, of which vice and folly are the only proper objects, is often most unjustly bestowed upon poverty and weakness, has been the complain of moralists in all ages.*

*We desire both to be respectable and to be respected. We dread both to be contemptible and to be contemned. But, upon coming into the world, we soon find that wisdom and virtues are by no means the sole objects of respect; nor vice and folly, of contempt. We frequently see the respectful attentions of the world more strongly directed towards the rich and the great, than toward the wise and virtuous. We see frequently the vices and follies of the powerful much less despised than the poverty and weakness of the innocent. To deserve, to acquire, and to enjoy, the respect and admiration of mankind, are the great objects of ambition and emulation. [Smith, I bid., 126]*

Due to this "corruption" of moral sentiments, the market was then necessary to provide a second level of checks on behavior. Smith argued that the butcher would not provide you with dinner out of benevolence but the market was a mechanism by which his self interest would be channeled into a behavior pattern which would be consistent with the needs of society. Perhaps one of the best know quotes from Smith reveals the role of the market directed by self interest:

*"It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest. We address ourselves, not to their humanity but to their self love, and never talk to them of our own necessities but of their advantage." [Smith, p 14]*

Smith also recognized that a system of jurisprudence, provided by government was also necessary. The system of jurisprudence provided a third check on the behavior of self-interested individuals. The role of jurisprudence in economics is captured by Smith when he states:

*"people of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices." [Smith, p 128]*

*"The interest of the dealers, however, in any particular branch of trade or manufactures, is always in some respects different from, and even opposite to, that of the public. To widen the market and to narrow the*

*competition, is always in the interest of the dealers. To widen the market may frequently be agreeable enough to the interest of the public: but to narrow the competition must always be against it, and can serve only to enable the dealers, by raising their profits above what they naturally would be, to levy, for their own benefit, an absurd tax on the rest of their fellow-citizens. The proposal of any new law or regulation of commerce which comes from this order, ought always be listened to with great precaution, and ought never to be adopted till after having been long and carefully examined, not only with the most scrupulous, but with the most suspicious attention.” [Smith, WN, p 250]*

Smith's primary objective was two-fold; first to show how the self-interested behavior of individuals was brought into harmony with the interest of a just society and second, to show the causes and nature of economic growth.

Smith used some elementary microeconomic notions, particularly to explain the causes of economic growth (or the creation of the wealth of a nation. One of the primary forces that promoted economic growth was the division of labour. It is of such importance to him that it is the first line in the Wealth of Nations,

*“The greatest improvement in the productive powers of labour, and the greater part of the skill, dexterity, and judgement with which it is any where directed, or applied, seem to have been the effects of the division of labour. [Smith, WN, p 3]*

However, like all economic phenomenon (there may be a few exceptions), the benefits of the division of labour do not come without costs. Smith argues that the division of labour, pushed to excess causes problems;

*“In the progress of the division of labour, the employment of the far greater part of those who live by labour, that is, of the great body of the people, comes to be confined to a few very simple operations, frequently to one or two. But the understandings of the greater part of men are necessarily formed by their ordinary employments. The man whose whole life is spent in performing a few simple operations, of which the effects too are, perhaps, always the same, or very nearly the same, has no occasion to exert his understanding, or to exercise his invention in finding out expedients for removing difficulties which never occur. He naturally loses, therefore, the habit of such exertion, and generally becomes as stupid and ignorant as it is possible for a human creature to become. [Smith, WN, p 734]*

Smith continues his description of the ill effects of excessive division of labour and ultimately concludes:

*"But in every improved and civilized society this is the state into which the labouring poor, that is, the great body of the people, must necessarily fall, unless government takes some pains to prevent it."*  
[Smith, WN, p 735]

In the next several pages, Smith describes the advantages of a society that is educated as well as one that has skills.

The economists of the late 18th and early 19th centuries tended to expand and to modify the analysis started by Smith. Most of the economists in this period were generally interested in macroeconomic questions and like Smith were classified as Classical Economists.

**DAVID RICARDO** [1772-1823]

**THOMAS MALTHUS** [1766-1834]

Market oriented or "mainstream" microeconomics began to emerge from three separate roots in the mid-1800's. The British root was steeped in the *Utilitarianism* of Jeremy Bentham, the major European root grew out of French *rationalism* of Descartes. The third root has its beginnings in the work of Carl Menger (1840-1921) and evolved into the Austrian School. These three strains of microeconomics have different ideological foundations and different implications. However, the two major strains (utilitarianism and rationalism) have been grafted on to one another and their differences obscured over time. The development of Austrian economics is not presented here since it is recognized as ideologically and methodologically separate from mainstream microeconomics. Similarly, microeconomics in the institutionalist, socialist, anarchist and Marxian traditions are not discussed for similar reasons. Heterodox microeconomics will be discussed in chapter 10.

## UTILITARIANISM

Jeremy Bentham [1748-1832], an English philosopher, lay the foundation for British Utilitarian microeconomics in his *Introduction to the Principles of Morals and Legislation* [1780]. Bentham presumed that human behavior was rational and was directed by "felicific calculus," an evaluation of the pains and pleasures associated with each choice. In Bentham's words:

*"Nature has placed mankind under the governance of two sovereign masters, pain and pleasure. It is for them alone to point out what we ought to do, as well as to determine what we shall do. On the one hand the standard of right and wrong, on the other the chain of causes and effects are fastened to their throne. They govern us in all we do, in all we say, in all we think: every effort we make to throw off our*

*subjection, will serve but to demonstrate and confirm it. In words a man may pretend to abjure their empire: but in reality he will remain subject to it all the while. The principle of utility recognizes this subjection, and assumes it for the foundation of that system, the object of which is to rear the fabric of felicity by the hands of reason and law. . .*

*By the principle of utility is meant that principle which approves or disapproves of every action whatsoever; and therefore, not only of every action of a private individual, but of every measurement of government.*

*By utility is meant that property in any object, whereby it tends to produce benefit, advantage, pleasure, good, or happiness. . .or. . . to prevent the happening of mischief, pain, evil, or unhappiness to the party whose interest is considered; if that party be the community in general, then the happiness of the community; if a particular individual, then the happiness of that individual.*

*The community is a fictitious body, composed of the individual persons who are considered as constituting as it were its members. The interest of the community then is, what? -- the sum of the interests of the several members who compose it.*

*It is vain to talk of the interest of the community, without understanding what is the interest of the individual. A thing is said to promote the interest . . . of an individual, when it tends to add to the sum total of his pleasures; or, what comes to the same thing, to diminish the sum total of his pains.*

*An action then may be said to be conformable to the principle of utility . . . when the tendency it has to augment the happiness of the community is greater than any it has to diminish it.*

*A measure of government. . .may be said to be conformable to or dictated by the principle of utility, when in like manner the tendency which it has to augment the happiness of the community is greater than any which it has to diminish it." [Bentham, An Introduction to the Principle of Morals and Legislation, 1823 edition, Printed in Utilitarians, Anchor Books, Garden City, NY, pp.17-18]*

Bentham saw his analysis as consistent with Smith's. While Bentham's utilitarianism was a relatively broad philosophy that he saw as the foundation of morality, there were several rudimentary ideas advanced by Bentham that were

extracted by economists and became crucial to the development of British utilitarian microeconomics:

- *individuals are rational*
- *individuals are guided by pain and pleasure (utility)*
- *right and wrong are "tied" to pain and pleasure*
- *the sum of the utilities of individuals is the total utility of the community*
- *if each individual maximizes their utility it will maximize the utility of the community... "the greatest good for the greatest number" (Notice in the quote above, Bentham states that the purpose of utilitarianism is to "...produce benefit, advantage, pleasure, good, or happiness. . .or. . . to prevent the happening of mischief, pain, evil, or unhappiness to the party whose interest is considered; if that party be the community in general, then the happiness of the community; if a particular individual, then the happiness of that individual.")*

## MILL AND UTILITARIANISM

John Stuart Mill (1806-1873) can be regarded as a transitional writer, he connects the Classical economists and Utilitarianism to the development of market oriented microeconomics. Mill was an admirer and proponent of David Ricardo, a Classical economist. Much of Mill's work seems to be an effort to integrate Ricardian economics with Utilitarianism.

Ricardo's *Principles of Political Economy and Taxation* had influenced the direction of economic thought in two ways. First, the emphasis shifted from Smith's emphasis on economic growth to distribution. Second, the methodology used by Ricardo emphasized abstract, deductive argument that was to become a major characteristic of mainstream economic thought. Utilitarianism used the individual as the unit of analysis. This focus on individualism, grafted on to Ricardo's question of distribution formed the launch pad for neo-classical economic theory. Distribution came to be seen solely as market exchanges between individuals.

By the time that Mill wrote, the industrial revolution had encouraged the development of larger scale manufacturing and the organizational structure of the production units was changing. Due to the demands for greater access to capital, the modern corporate structure with limited liability had begun to develop. While the joint-stock company had long history, it was not until 1830's that the Americans created the corporate structure characterized by limited liability. This new phenomenon altered manufacturing processes by allowing (even requiring) a greater concentration of capital and more capital intensive technologies to be used. This began to intensify the split between owners (stockholders), management and workers. Mill's analysis of the economy was, in part, shaped by these changes.

Mill's tie to utility is established in the "Preliminary Remarks" of *Principles of Political Economy*, (1848) he states:

*"This leads to an important distinction in the meaning of the word wealth, as applied to the possessions of an individual, and to those of a nation, or of mankind. In the wealth of mankind, nothing is included which does not of itself answer some purpose of utility or pleasure."*

[Mill, pp. 24-25]

While it is generally accepted that Mill was not always consistent and there was a major shift in his perspective, his work is an important link in the evolution of mainstream microeconomics. While Schumpeter considered Mill as a Utilitarian with qualifications (Schumpeter 1954, p408), Samuel Hollander argues that Mill may have departed from Benthamite utilitarianism early in his career his mature position was a "...return to Bentham." (Hollander, p 605,638-656) Hollander shows the utilitarianism of Bentham and Mill was a philosophy and system of ethics that provided a foundation for a rich analysis of economic processes. However, modern mainstream microeconomics extracts a few of the basic ideas and ignores the normative, ethical content and constructs a system that they believe is "positive" economics with no normative elements.

Mill clearly identifies the concepts of supply, demand and equilibrium in Book III of *Principles of Political Economy*. Supply and demand are seen as functional relationships expressed as equations and the differences between demand and quantity demanded and supply and quantity supplies are apparent. [Mill, pp.544-554] The concept of elasticity is implied in Mill's analysis of equilibrium of supply and demand. Both Mill and Bentham implied the idea of diminishing marginal utility, although neither of them uses the words "marginal utility".

The structure of Mill's *Principles* also reveals information about his approach to economics: Book I is titled "Production," Book II is "Distribution," Book III is "Exchange." Mill argued that the laws of production were immutable while the laws of distribution and exchange were subject to change. Society could choose the methods of distribution and exchange that would result in the Utilitarian ideal; "the greatest good for the greatest number."

The works of both Mill and Bentham were explicitly normative. Bentham used the idea of diminishing marginal utility of money to argue for a redistribution of income. Mill advocated a wide range of social reforms using his utilitarian economics. Haney identifies Mill's real contributions to economics as:

- *He led in the application of the idea of utility to institutions and policies, thus helping to free the Classical economics from its deadly assumptions of a "law of nature" and "natural rights."*

- *He led in recognizing the importance of an understanding of the relation between individuals and society, and in developing the principles underlying a social point of view and the relation of government to industry. [Haney, p 474]*

## MARGINALISM

The next link in the chain of British microeconomics was William Stanley Jevons. The connections may seem tenuous, particularly given Jevons' statement in the Preface to the Second Edition of *The Theory of Political Economy*:

*"When at length a true system of Economics comes to be established, it will be seen that that able but wrong-headed man, David Ricardo, shunted the car of Economic science on to a wrong line, a line, however, on which it was further urged towards confusion by his equally able and wrong-headed admirer, John Stuart Mill."* [Jevons, p 1]

What is clear is that Jevons was not opposed to utilitarianism, rather to Mill's version of utilitarianism and its attempted use to save Ricardian economics. Jevons is largely responsible for the simplification of Bentham's utilitarian philosophy as it has come to be used as a foundation for mainstream microeconomics. In the introduction to *The Theory of Political Economics*, Jevons makes the following statements:

*"The science of economics rests upon a few notions of an apparently simple character. Utility, wealth, value, commodity, labour, land, capital are the elements of the subject; and whoever has a thorough comprehension of their nature must possess or soon be able to acquire a knowledge of the whole science"* [Jevons, p 1]

*"Repeated reflection and inquiry have led me to the somewhat novel opinion, that value depends entirely upon utility"* [Jevons, p 1]

*"The theory consists in applying the differential calculus to the familiar notions of wealth, utility, value, demand, supply, capital, interest, labour, and all the other notions belonging to the daily operations of industry."* [Jevons. p 3]

It is clear that Jevons sees utility as the determinant of value, however in order value to be quantified, he must abstract and simplify the concept of utility. One of Jevons' primary goals is to make economics a science by copying the methodology of the "hard" sciences. While many precursors of Jevons used the mechanical, Newtonian paradigm, Jevons' work is almost exclusively in this vein. The reduction of Utilitarianism to mathematical language resulted in a far more simplistic tool that no longer recognized the moral and ethical implications.

Jevons commiserates with Bentham about the problems of measuring utility and agrees that "*we cannot weigh, nor gauge, nor test the feelings of the mind....*" [Jevons p 7], so he works backward:

*"I hesitate to say that men will ever have the means of measuring directly the feelings of the human heart. A unit of pleasure or of pain is difficult even to conceive: but it is the amount of these feelings which is continually prompting us to buying and selling, borrowing and lending, labouring and resting, producing and consuming; and it is from the quantitative effects of the feeling that we must estimate their comparative amounts. We can no more know nor measure gravity in its own nature than we can measure a feeling; but, just as we can measure gravity by its effects in the motion of a pendulum, so we may estimate the equality or inequality of feelings by the decisions of the human mind."* [Jevons p 11]

Jevons' approach is to infer the utility received from goods by measuring the prices and quantities of the goods that people exchange.

Jevons' modifications to the Utilitarianism of Mill and Bentham was partially caused by the changes that had occurred in the industrial revolution. Large scale manufacturing was more fully developed and the emphasis began to shift from a focus on society to "industry." Both Bentham and Mill were tied to "the greatest good for the greatest number." While they equated the total social utility with the sum of each individual's utility, they were concerned with the well being of society. Jevons, however, concentrates on the utility of the individual and states that the theory of economics is the application of calculus to "*...wealth, utility, value, demand, supply, capital, interest, labour, and all the other notions belonging to the daily operations of **industry.***" Notice that it is industry not society.

Jevons' development of marginal utility, or what he called the "final degree of utility" also lead him to a more simple form of Utilitarianism. For Jevons the final degree of utility was a continuous function of the quantity of a good consumed. [Jevons, pp 49-57] It is necessary to be able to have utility in a form that the final degree of utility of one good can be numerically compared to the final degree of utility of another by each individual.

Carl Menger (1840-1921), an Austrian, developed the concept of marginal utility concurrently and independent of Jevons. However, Menger avoided "constructing it on a Benthamite base" [Oser and Brue, p.237] and argued that there were different classes of commodities based on the urgency of need. This is explicitly normative in that it requires a value judgement about which classes of goods were of a higher need. This did not contribute to the development of economics as a "value free science" and was not

integrated into mainstream microeconomics but, instead was used as the foundation of the Austrian School of economics.

Jevons in his reaction against the labour theory of value and his attempt to derail Ricardo and Mill emphasizes utility as the determinant of value and neglects production. It also results in his failure to see that both production and utility determine the exchange value or price of a good.

## EMERGENCE OF NEO-CLASSICAL ECONOMICS

Two notable events occurred in 1890; the passage of the Sherman Antitrust Act in the United States and the publication of Alfred Marshall's (1842-1924) *Principles of Economics*, (1890) in England. The Sherman Act reflects what had happened in the evolution of the large corporate firm, its role in the industrial society and the attendant public concerns. Marshall's book represents a major plateau in the development of mainstream microeconomics. Marshall was trained as a mathematician, however he resisted writing a book that was primarily mathematical in character;

*"The chief use of pure mathematics in economic questions seems to be in helping a person to write down quickly, shortly and exactly, some of his thoughts for his own use: and to be sure that he has enough, and only enough, premises for his conclusions(i.e. that his equations are neither more nor less in number than his unknowns). ... ; yet it seems doubtful whether anyone spends his time well in reading lengthy translations of economic doctrines into mathematics, that have not been made by himself."* [Marshall, p xiii]

This suggests that mathematics is important and that each economist ought to be able to work through the math for themselves. There are two other observations that Marshall makes in the Preface to his *Principles* that are of concern here. In referring to the work of Cournot, Marshall writes:

*"He taught that it is necessary to face the difficulty of regarding the various elements of the economic problem,-- not as determining one another in a chain of causation, A determining B, B determining C, and so on -- but as all mutually determining one another. Nature's action is complex: and nothing is gained in the long run by pretending that it is simple, and trying to describe it in a series of elementary propositions.* [Marshall, xii]

The second comment suggests that Marshall considers economics as only one of the elements in seeking solutions to problems:

*"Economic laws and reasonings in fact are merely a part of the material, of which conscience and common-sense have to make use in solving practical problems, and in laying down rules which may be a guide*

*to life. ... But ethical forces are among those of which the economist has to take account.* [Marshall, vii]

Marshall was attracted to the study of economics through his interest in ethics and social justice. J.K. Whitaker describes Marshall's shift from mathematics to economics:

*"In any case, whether by inclination or renunciation, new concerns were rapidly drawing him away from his first love of mathematics, and his persistence with mathematical coaching appears to have been due mainly to the desire to repay a wealthy uncle who had assisted in his undergraduate career. Plunging headlong into philosophy, discovering Kant and Hegel, absorbing Darwin and Spencer, the newly-awakened Marshall came at last to ethics, psychology and - rather reluctantly - political economy."* [Whitaker, p 5]

There is significant evidence that suggests that Marshall's economics was always an extension of his concerns about ethics, even though he was reluctant to make explicit his ethical beliefs. [Coats, p 153-177] While Marshall's reluctance to make the ethical foundations of his economics explicit, it was the narrowing of economics that obscured the underlying ethics.

These quotes from Marshall are made to emphasize three important points that economists should keep in mind as they practice their art:

- *"Mathematics is an important and useful tool but, it should not be allowed to get in the way and cause us to forget the important economic questions."*
- *"Nature, including economics is complex, it is a mistake to over simplify by considering only linear cause and effect."*
- *"Pure economics is not a substitute for ethics. Some ethics is implied in the economic methodology we choose, but we should make it explicit."*

Marshall had reservations about utilitarianism (Coats, p 156) but, like Jevons, Marshall argued that while utility could not be measured it could be inferred from the behavior patterns:

*"We cannot measure any affection of the mind directly; the utmost we can do is to measure it indirectly through its effect. No one can compare and measure accurately against one another even his own mental states at different times: and no one can measure the mental states of another at all except indirectly and conjecturally by their effects.* [Marshall, p.76]

The effects that were to be measured were the quantities which would be demanded and supplied at various prices. This restricts Utilitarianism to considering

only the utility that is derived from goods consumed by individuals who have the money (or income) necessary to participate in a market transaction. This transition is of crucial importance. It shifts economic thought from a utilitarian ethic based on "the greatest good for those individuals whose interests are of concern" to a market ethic expressed by, "the greatest good for those who have the income/wealth to participate in a market exchange."

Marshall is well known for his scissors analogy of supply and demand with the resultant equilibrium. He made major contributions to the exposition of static partial equilibrium. His development of marginal utility, consumer surplus, pure competition, elasticity and many of the standard concepts of modern mainstream microeconomics appear in a familiar form. His *Principles* was used as one of the major texts until well into the 20th century.

It is also interesting to note that while Marshall's methodology was predominantly static, partial equilibrium analysis in the Newtonian mechanical tradition, he felt that the biological paradigm was the correct domain for economics:

*"The main aim of all three chapters (II, III and VI) is to emphasize the notion that economics is a science of life, and is akin to biology rather than mechanics."* [Marshall, p.8]

## SUMMARY OF UTILITARIAN MICROECONOMICS

The British root of mainstream microeconomics emerged from the philosophy of utilitarianism. Its foundation began with the individual who was capable of deciding which goods gave them pleasure (or pain). The ability of a good to give pleasure was called utility. Bentham and those who followed him recognized that it was not possible to make interpersonal utility comparisons, nor was it possible to measure utility directly. Both Jevons and Marshall argued that the choices were made on the last increment of utility, *marginal utility*. Both considered that marginal utility was a function of the quantity of the good consumed. Total utility of society was simply the sum of the individual utilities which focuses the analysis on the individual. This atomistic analysis which ignored many aspects of social welfare was also reinforced by the concept of partial equilibrium.

The concept of value had been reduced to price.

*"The value, that is the exchange value, of one thing in terms of another at any place and time, is the amount of that second thing which can be got there and then in exchange for the first. Thus the term is relative, and expresses the relation between two things at a particular place and time. ...Instead of expressing the values of lead and tin, and wood, and corn and other things in terms of one another, we express*

*them in terms of money... and we call the value of each thing thus expressed its price."* [Marshall, p.8]

Since utility cannot be measured, but it determines value, price is used as a proxy for both utility and value. In a Utilitarian world, these prices must be established through *voluntary* exchanges between individuals that can only occur in a (purely competitive) market setting with nonattenuated, private property rights.

The ethical foundations of economics were obscured as economists adopted an abstract, mechanical, mathematical methodology to make their analysis of market transactions "scientific."

## **FRENCH RATIONALISM AND MICROECONOMICS**

While the British were constructing their microeconomics on utilitarianism there were a number of French writers who were applying marginal analysis to economic problems. Several of these writers are noteworthy because of their contributions to the development of microeconomic analysis from the French rationalist tradition, or what Ekelund and Hébert call the "French School". [Ekelund and Hébert, 1978 pp.636-668] They were Louis Marie Henri Navier (1785-1836), Joseph Minard (1781-1870), and Arsine-Jules-Émile-Juvenal Dupuit (1804-1866). Antoine-Augustin Cournot (1801-1877), primarily a mathematician, was not an engineer but is included here as one of the contributors to the French School. Cournot and Dupuit are the most familiar to economists. These two men were contemporaries, lived in Paris at the same time, worked on related topics and apparently never met. Their work went largely unnoticed by the economics profession for almost 30 years until Leon Walras (1834-1910) published *Elements of Pure Economics*, (1874).

The French rationalist root of microeconomic theory can be traced from Cournot and the French engineers to Walras to Vilfredo Pareto (1848-1923). The concept of utility is used (particularly by Dupuit and Walras) but it is not the philosophical foundation of the analysis. The beginnings of the French approach lie in the evaluation of public projects. Several French schools emphasized engineering. Dupuit, Navier and Minard were associated one of the most famous, École des Ponts et Chaussées while Walras studied at École des Mines. Their focus was to provide a means to select those projects that would improve the welfare of society.

Robert B. Ekelund and Robert F. Hébert describe the contributions of the engineers from École des Ponts et Chaussées. (ibid) Navier's contributions are identified as:

*(a) he established a concept of public welfare which provided direct impetus to Dupuit's analysis a decade or so later, (b) he presented what may well be the first systematic discussion of public services provision based on benefit-cost analysis, and (c) he established*

*economic pricing rules regarding both public and private production of public services, especially transport. [Ibid., p.639]*

Navier developed a B/C criterion for evaluating public projects, considered the alternatives of private versus public production and regulation. Ekelund and Hébert also point out that:

*"The economic writings of Henri Navier demonstrate a pragmatism typical of most, if not all, of the French engineers. This approach reflects a genuine concern for utilizing and, if necessary, developing the tools related to problems at hand, in addition to obtaining empirical estimates of the theoretical quantities requisite to optimum decision making." [Ibid., p.644]*

Joseph Minard explored the concepts of

*". . . demand, opportunity costs, the value of time and services, the effects of taxes on income distribution and the use of compound interest in calculating the value of capital expenditures." [Ibid., p.644]*

Minard made a distinction between private utility and public utility. Public utility was based on real-wealth considerations induced by changes in cost savings and were dependent upon the income distribution. Consequently, normative judgments are required. Ekelund and Hébert quote Minard on the need to set priorities:

*". . . most questions of political economy are connected with the unequal distribution of wealth and solutions to them would be puzzling if this inequality did not exist. The material needs of most people are very great, so that anything which tends to satisfy or frustrate those needs assumes the first importance.*

*If all were equally wealthy, it would be extremely difficult to determine whether it would be better for the country to dig a canal or to build a theatre, or a monument; the answer would depend on the preference of the greatest number. But we would all undoubtedly admit that satisfaction of the basic, physical needs of life is preferable to the pleasure of seeing a comedy or gazing at a monument. In the real world, moreover, there are many cold, ill-housed unfortunates who would be somewhat better off by the fact that a canal lowered the price of fuel and construction materials. The public interest would be better served, therefore, by the construction of a canal instead of a theatre, or a monument. " [Minard 1850, p.16]*

Minard's awareness of a distinction between public and private utility and the interdependence of economic variables is shown by his analysis that;

*“. . . the increase in the property values surrounding a new bridge is usually offset, he thought, by a decrease in property values near the old bridge.” [Ibid, p.648]*

The work of Navier and Minard reveals an awareness of the practical problems associated with making choices but it also provides an insight into the theoretical issues.

Dupuit, like Navier and Minard, was also concerned with developing a method of analyzing public utility. His work was in the tradition of the other engineers associated with École des Ponts et Chaussées, however he added a clear discussion of marginal utility and related it to a negatively sloped demand function. (Ekelund and Hébert, 1990, p.300) Marginal utility was a function of the quantity of the good that a person had. Using this concept of marginal utility, Dupuit elaborated on;

*“. . . several analytical contributions now associated with his name: demand and consumer's surplus, profit maximization, price discrimination, marginal cost pricing, and so on.” [Ekelund and Hébert, 1978 p.657]*

Augustin Cournot is the best known of the early contributors to French rationalist microeconomics. As a mathematician, Cournot was possibly more theoretical than the French engineers. For this reason, his non-utilitarian foundation is more apparent;

*“But Bentham's world was not the world of Cournot. His lodestar was not utilitarianism but the rationalism of the French philosophic tradition, which trusted in the powers of reason to reveal a mathematically ordered world. Descartes, from which this philosophy stemmed, had also been the discoverer of analytic geometry, whose system of coordinates now became the parade ground for the display of the new approach to economics. It was thus no accident that the French scholars excelled in the field of pure mathematical economics and that their work was cumulative and progressive, reaching its full flowering in the thought of Walras, which was linked with that of Cournot. . . . Those who conceive of the world as rationally ordered usually show little inclination to extol the role of the human will. [Spiegel, p.509]*

Cournot is well known for his analysis of the “*law of demand*”, monopoly, duopoly and competitive market models. While these are important contributions, mainstream neoclassical microeconomics usually ignores the philosophical context in which Cournot develops the concepts. In the Preface to *Researches into the Mathematical Principles of the Theory of Wealth*, Cournot qualifies his analysis:

*"I have not set out to make a complete and dogmatic treatise on Political Economy: I have put aside questions, to which mathematical analysis cannot apply, and to those which seem to me entirely cleared up already."* [Cournot, p. 5]

There are two important areas in which mathematical analysis cannot apply. One of the areas, which was ultimately addressed by Walras, was general equilibrium. Cournot states:

*"So far we have studied how, for each commodity by itself, the law of demand in connection with the conditions of production of that commodity, determines the price of it and regulates the incomes of producers. We considered as given and invariable the prices of other commodities and incomes of other producers: but in reality the economic system is a whole of which all the parts are connected and react on each other. An increase in the income of the producers of commodity A will affect the demand for commodities B, C, etc., and the incomes of their producers, and, by its reaction will involve a change in the demand for commodity A. It seems, therefore, as if, for a complete and rigorous solution of the problems relative to some parts of the system, it were indispensable to take the entire system into consideration. But this would surpass the powers of mathematical analysis and of our practical methods of calculation, even if the values of all the constants could be assigned to them numerically."* [Cournot, p. 127]

The problem of interdependence was not new; François Quesnay (1694-1774), a Physiocrat, had developed the *Tableau Economique* (1758) as a means of showing interdependence. Walras and later by Wassily Leontieff (1906- ) constructed mathematical systems to analyze *general equilibrium*.

The second area that Cournot argued was beyond the capabilities of mathematics was;

*"The abstract idea of **wealth** or of **value in exchange**, a definite idea, and consequently susceptible of rigorous treatment in combinations, must be carefully distinguished from the accessory ideas of utility, scarcity, and suitability to the needs and enjoyments of mankind, which the word wealth still suggests in common speech. These ideas are variable, and by nature indeterminate, and consequently ill suited for the foundation of a scientific theory. The division of economists into schools, and the war waged between practical men and theorists, have arisen in large measure from the ambiguity of the word wealth in ordinary speech, and the confusion which has continued to obtain*

*between the fixed, definite idea of value in exchange, and the ideas of utility which every one estimates in his own way, because there is no fixed standard for the utility of things."* [Cournot, pp. 10-11]

Cournot was unwilling to base his *law of demand* on utility analysis. Later in Cournot's life he wrote a letter to Walras criticizing the use of utility;

*"I have great fear that your utility curves will lead you only to pure laissez faire, that is, in the domestic economy to a land denuded of its forests, and in the international economy to the subjugation of the common run of peoples by a privileged one in line with the theory of Darwin."* [Spiegel, p. 553]

In the Chapter "Of the Law of Demand," Cournot perceives the quantity demanded as a continuous function of the price. It is an inverse relationship and it depends on "*the kind of utility*", the nature of services it can render, habits and customs, average wealth and the distribution of wealth. Cournot's demand function is an empirical function estimated from observation. It is not based on a theory of utility.

It must be emphasized that Cournot is concerned with *social wealth* but restricts his analysis to wealth is defined as value in exchange. Cournot is careful to draw a distinction between *commercial wealth* and *social wealth*:

*"It has sometimes happened that a publisher, having in store an unsalable stock of some work, useful and sought after by connoisseurs, but of which too many copies were originally printed in view of this class of readers for whom it was intended, has sacrificed and destroyed two-thirds of the number, expecting to derive more profit from the remainder than from the entire edition.*

*There is no doubt that there might be a book of which it would be easier to sell a thousand copies at sixty francs, than three thousand at twenty francs."* [Cournot, p. 11]

Not only does this passage illustrate the awareness of the divergence of social and commercial wealth, but also suggests that Cournot understood the concept of price elasticity of demand. The divergence of social and commercial wealth is not so great as to render the use of value in exchange as a measure of wealth totally inappropriate. He argues that as civilization progresses the differences between social and commercial wealth may be reduced through "*...brokerage, losses of time into discounts, chance of loss into insurance, and so on.*" [Cournot, p.17]

Cournot shows that the price of a good is determined by the conditions of competition among the sellers. Under conditions of duopoly the output is greater than under a monopoly and less than in competitive markets. The price, or *value in exchange* decreases as the number of sellers increases.

While Cournot's work did not a greatly influence the development of microeconomic theory during his lifetime, it is obvious that his analysis was quite advanced. Cournot's influence on the development of microeconomics is through the work of Leon Walras (1834-1910). Walras' father was a classmate of Cournot and encouraged Leon to study *Researches into the Mathematical Principles of the Theory of Wealth*. Walras was trained as an engineer at the École des Mines, however his professional career was that of an economist at the University of Lausanne. He was a prolific writer who exchanged letters with most of the important economists during this time and published extensively.

Walras took Cournot's empirical demand function and the concern about the interdependent nature of economic behavior and constructed a *general equilibrium* model. His general equilibrium can be seen as a descendent of Quesnay's *tableau* that had revealed the interdependence of the various components of the economic system. Walras was favorably disposed toward the Physiocrats but faulted them for not explaining how prices, rent, wages, or interest were determined. The general equilibrium model explains how inputs used to produce a set of goods that will result in the maximum social wealth. In the course of developing the analysis, Walras uses utility analysis to explain Cournot's demand functions. As mentioned earlier, Cournot expressed reservations about Walras use *utility curves*. While Walras used the concept of utility, he was always highly critical of the British economists (with the possible exception of Jevons). [Ekelund and Hébert, 1990, p. 422]

While Walras used utility analysis to explain the nature of demand he was approaching utility from a different direction than the British Utilitarians. While the British started from an individualistic utilitarianism based on natural rights and worked toward demand and ultimately the total utility of society, Walras began from the perspective of social welfare, or social wealth and worked to demand and then explained demand with utility analysis.

## **INTEGRATION OF BRITISH UTILITARIANISM AND FRENCH RATIONALISM**

Modern, mainstream microeconomic theory is the result of two separate philosophical foundations: British Utilitarianism and French Rationalism. The two approaches are fundamentally different and consequently encourage us to ask different questions. The Utilitarian approach encourages the focus to be on individual behavior and the optimization of the welfare of the individual. The Rationalist approach begins with social welfare and therefore asks a different set of questions. The two approaches are grafted on to one another through the works of Francis Ysidro Edgeworth [1845-1926] and Vilfredo Pareto [1848-1923].

The marginalism of Jevons, et al. depended on a system of utility that could be measured with cardinal numbers, i.e. utility which could be expressed as an amount as well as a direction (pain or pleasure). While attempts at creating a felicific calculus of cardinal measurements of utility were pedagogically pleasing, they lacked empirical content. Henry Sidgwick [1838-1900], in his *Methods of Ethics*, sought a method to operationalize utilitarianism by giving it empirical content. It is important to note that Sidgwick's ideas were expressed in connection with ethics and that he carefully distinguished between "Universal Hedonism" (which he called Utilitarianism) and "Egoistic Hedonism." [Sidgwick, 1874, pp 381-384] Utilitarianism (or Universal Hedonism) was defined by Sidgwick in the same spirit as Bentham,

*"By Utilitarianism is here meant the ethical theory, first distinctly formulated by Bentham, that the conduct which, under any given circumstances, is externally or objectively right, is that which will produce the greatest amount of happiness to all whose interests are affected."* [Sidgwick, p 381.]

Egoistic Hedonism was defined by Sidgwick as;

*"the system that fixes as the reasonable ultimate end of each individual's action his own greatest happiness."* [Sidgwick, p 109]

Sidgwick's main thrust is to elaborate on the forces which prevent and those that promote a consistency between the utilitarian goals of the individual and society as a whole.

Francis Ysidro Edgeworth draws an analogy between the "*Principles of Maximum Energy*" (Which he calls the highest generalization in physics.) and the "*Principles of Greatest Happiness.*" Citing Sidgwick frequently, Edgeworth develops his "*lines of indifference or lines of preference,*" and a "*contract curve.*" [Edgeworth, pp 19-56] His analysis is based on exchange or contract between two parties. The lines of indifference were constructed to show the combinations of goods that yield the same levels of utility to an individual. When two individuals contract (or exchange) they reach a "settlement" where the lines of indifference for the two individuals are "not only coincident, but in opposite directions." [Edgeworth, p 22.]

In large measure, the elements of indifference curve analysis were brought together by Vilfredo Pareto [1848-1923]. Pareto was the successor to Walras at the University of Lausanne whose name has been associated with the basic criteria used as a measure of efficiency, "*Pareto Optimality.*" Pareto recognized that the word "utility" was used to describe at least two different phenomena,

*"In political economy the word utility has come to mean something quite different from what it can mean in everyday language. Thus morphine is not useful, in the ordinary use of the word, sense it is*

*harmful to the morphine addict; on the other hand it is economically useful to him, even if it is unhealthful, because it satisfies one of his wants. Although the older economists had mentioned this ambiguity, it is still forgotten occasionally; also, it is essential not to use the same word to mean such different things. In our Cours we propose to designate economic utility by the word **ophelimity**," [Pareto, p 111]*

Pareto's term, ophelimity was never adopted by mainstream economists, so it is not used here, however the distinction is still of importance.

The mathematics and graphs which Pareto uses to present his analysis appears similar the presentations in modern economics texts. However, he makes some distinctions about behavior, which are no longer discussed. Pareto identifies three separate types of behavior with respect to economic preferences as represented in indifference curves and market behavior. First, is Type I behavior that represents,

*"...seeking only the satisfaction of his tastes, given a certain state or condition of the market." [Pareto, p 115]*

While this act may modify the state of the market, that is not the intent of the behavior.

*"On the other hand, the individual considered may seek to modify the conditions of the market in order to gain an advantage therefrom or for any other purpose whatsoever." [Pareto p 115]*

This behavior is called Type II. Type III behavior

*"...is the one which occurs when one wishes to arrange the entire economic phenomenon in such a way that maximum welfare is obtained for all who participate." [Pareto p 117]*

Indifference functions (or curves) and the concept of Pareto Efficiency have become two of the major concepts used by modern neo-classical economists. They provide the foundation for demand functions, index numbers (such as the Consumer Price Index or CPI), benefit cost analysis, rate of return on investment, internal rates of return and other tools used in a variety of contexts.

## CONCLUSION

The uses of indifference functions (or curves) as the basis of demand analysis has played a major role in shaping the perspective of modern, mainstream neoclassical economics. Aristotle, Smith, Marshall and a large number of other economists were painfully aware of the ethical implications of their economic models and analysis. Production, distribution and consumption were perceived to be, at least partially, ethical problems as well as economic problems. If an individual says, "I prefer bread to cake." It is a statement of preferences. If an institution (government, religion, or market)

determines that individual A should receive cake and individual B should get bread, it involves an ethical component.

The indifference curve is thought of as an expression of an individual's preferences and therefore has no ethical content. However, this indifference function is used to derive individuals' demand functions that are then summed to a market demand function. The perception created is that the demand function is a representation of preferences, not an embodiment of ethical principles. Consequently, economists often mistakenly believe their analysis is "positive" in that it only describes what is and is devoid of normative content.

If microeconomics is to be useful as a set of tools to analyze problems and to evaluate alternatives, it is necessary to understand what the tools were designed to do and to understand their limitations.

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