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Revealed Preference Theory, Rationality, and Neoclassical Economics: Science or Ideology

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Abstract

Revealed Preference Theory (Samuelson 1938) is an attempt to establish economic theory as a genuine empirical science by ridding it of non-empirical psychological concepts. Samuelson's goal was to rid economic theory of the last vestiges of utility analysis. Samuelson structured his theory on a set of preference axioms that would explain the choices of economic agents. But revealed preference theory is rendered problematic because decision making is structured therein on preferences that conform to an implicit postulate of rationality. Matters are further compounded by the fact that despite theoretical support offered by theorists such as Varian, the empirical results demonstrate that agent decision making is often at variance with the formal axioms of revealed preference. The issue is not solved even when decision making is construed within the context of imperfect, that is, 'bounded rationality'. I argue that neoclassical economic theory is best understood as a form of rule utilitarianism. In this regard, neoclassical economics is unavoidably value-laden and should be construed as an aspect of normative welfare economics. Thus efforts by theorists such as Vanberg to salvage the assumed scientific credentials of neoclassical economics by construing the postulate of rationality in evolutionary terms are seen as problematic. Neoclassical economic theory is to be viewed essentially then as an ideology that presents a particular theory of human behaviour. It is this theory that serves as the foundations of modern capitalism and its practise as neoliberal economics. This is the anthropological question then: is such an ideology socially optimal for humans as social animals in terms of efficiency and equity?

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Résumé

La Théorie de la préférence révélée(Samuelson 1938) est une tentative d'établir une théorie économique comme étant une authentique science empirique en la débarrassant de tout concept psychologique non-empirique. Par ce moyen, Samuelson cherchait à débarrasser la théorie économique des derniers vestiges de l'analyse de la fonction d'utilité. 0Samuelson a structuré sa théorie autour d'un ensemble d'axiomes de préférence qui permettrait d'expliquer les choix des opérateurs économiques. Mais la théorie de la préférence révélée est rendue problématique, car la prise de décision y est structurée sur la base des préférences conformes à un postulat implicite de rationalité. Cela devient encore plus compliqué si on y ajoute le fait que malgré le soutien théorique apporté par ses tenants tels que Varian, les résultats empiriques démontrent que la prise de décision par l'opérateur varie souvent par rapport aux axiomes formels de la préférence révélée. Ce problème n'est pas résolu même quand la prise de décision est interprétée dans le contexte de la rationalité imparfaite, pour ne pas dire « circonscrite »J'affirme que la théorie économique néo-classique est mieux comprise comme une forme de règle de l'utilitarisme. A cet égard, l'économie néo-classique est inévitablement chargée de valeur et devrait être interprétée comme un aspect de l'économie normative de bien-être. Ainsi, les efforts de théoriciens tels que Vanberg pour sauver la prétendue identité scientifique de l'économie néo-classique, en interprétant le postulat de rationalité en termes évolutionnistes sont ressentis comme étant problématiques. La théorie économique néo-classique doit être dès lors perçue essentiellement comme une idéologie qui présente une théorie donnée du comportement humain. C'est sur cette théorie que se fonde le capitalisme moderne et sa pratique en tant qu'économie néolibérale. La question anthropologique est donc celle-ci : Une telle idéologie, est-elle socialement optimale pour les humains considérés comme animaux sociaux, en termes d'efficacité et d'équité ?

Preamble

John Maynard Keynes, arguably the most influential economist of the 20th century, and originator – along with Harry Dexter White of the US Treasury – of the well-known Bretton Woods institutions, the IMF and the International Bank for Reconstruction and Development (IBRD), now the World Bank, wrote the following in his 1936 *General Theory of Employment, Interest, and Money:*

> The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influence, are usually the

> slaves of some defunct economist. Madmen in authority, who hear voices in the air, are distilling their frenzy from some academic scribbler of a few years back. I am sure that the power of vested interests is vastly exaggerated compared with the gradual encroachment of ideas (Keynes 1936:383).

I cite the above because most human beings live their economic lives without reflecting on the precepts, concepts, and rules that they take for granted : the use of money, prices, inflation, interest rates, capital, etc. Yet, it is the influence of ideas about how humans in society produce and consume that determines their life chances, especially in Africa and the rest of the so-called Third World.

The economic system under which contemporary Africa lives is not one of traditional village reciprocity and redistribution; it is one determined by the dominant capitalist market system and its rules long established by economists and politicians in the West. It is a world of private property where those who own private capital are supposed to be free to invest that capital as they see fit, in free and open markets. In this context, the role of government is mainly to supervise market operations so as to ensure macroeconomic discipline. Whether in their activities some individuals become poor and destitute and others acquire great wealth is not really a matter for pure market economic theory. The goal is maximal market efficiency where rational decisions concerning the allocation of limited resources are supposed to be made. The theoretical basis for this is what is known as neoclassical economics, a positive empirical science according to its theorists. The applied side of neoclassical economics is what is known as 'neoliberal economics', the catechism of the cohorts of acolytes who administer its rituals and rites at global institutions such as the International Monetary Fund (IMF) and the World Bank.

And this neoclassical economics system – as a rule-governed neoliberal economics – dominates the economic activity of the world through the above-mentioned institutions and the World Trade Organisation (WTO). Neoclassical economics and its neoliberal rules represent the system of global capitalism. But this system just does not stand by itself, it is promoted and advanced throughout the world. This is the system of economics that is taught in most universities in the world including Africa. But the point here is that students are taught to accept the neoclassical description of economic reality as if it were scientifically valid in intent at least. The language is heavily quantitative, thereby giving the impression of science in action. Just as with religious dogma, there is no room for alternatives. But in reality the function of neoclassical economics is to reify and justify the ideological theory of market capitalism.

This should be an interesting observation regarding Africa, given that capitalism has not treated Africa well. Low wages, high unemployment, centre-periphery unequal exchanges, high prices, exploited and abused open markets that drive local producers into poverty, incessant dreams of fleeing to the West to do the work the Euro-Americans are not too keen about doing, poor and often costly education, equally poor housing and health care. So it behoves the African student of economics to ponder the results of a meta-analysis of neoclassical economics as it strove to establish itself as a science in order to cement the claim that capitalist market economics describes the natural and optimal behaviour and decision making of humans.

Introduction

In 1938 Paul Samuelson published a paper titled ' A Note on the Pure Theory of Consumer's Behaviour' (*Economica*, February 1938:61-73) in which he sought to settle once and for all the issue of how to establish the research discipline of economics on firm scientific moorings. Samuelson's paper is important because for 100 years prior to his paper there were serious methodological debates by theorists of economics on the need for economics to establish itself as a science on epistemological par with the natural sciences such as chemistry and physics.

It was in the 1840s that William Whewell argued that empirical science, then known as 'natural philosophy', should thenceforth be known as natural science – mainly because research in physics and chemistry was firmly and restrictedly confined to the empirical world – with no room left for the results of non-empirical or metaphysical speculation. It was on this basis that John Stuart Mill published his *Logic of the Moral Sciences* in which he argued that Economics was a deductive science rather an inductive one.

Subsequent to Mill and other theorists of economics such as Cairnes, the debate centred on how to wean economics as an objective science away from political economy which was wont to nurture issues of values and ethics. This was the context in which theorists such as Alfred Marshall and John Neville Keynes debated the future of economics as a research discipline.

John Neville Keynes, for example, argued that the foundations of economics should be those of a positive science which would serve as the basis for its prescriptive or normative side. The same approach held for Marshall and Sidgwick who argued along the same lines, that economics should be a positive science as distinct from its normative or prescriptive considerations. But there was much opposition from those who wanted to maintain the idea of economics, then known as political economy, as an

essentially moral science, that is one for which the ethical considerations relevant to human welfare were paramount.

One may wonder, parenthetically, why the antecedents of modern neoclassical economics all seem to be of Anglo-Saxon origin, specifically British, and almost all having their intellectual bases at Oxford, Cambridge and later the London School of Economics. The reason is that Britain was the first modern nation to industrialise and to become the world's leader in trade and commerce. But this pre-eminence also stemmed from the fact that the dominant British intellectual classes had adopted empiricism rather than abstract rationalism as the most effective way of understanding and controlling phenomena in the world. In this regard, the empiricist view of phenomena developed by Locke, Berkley and Hume was central and seminal.

The empiricist view of things also served as the methodological foundations not only for the natural sciences but also for the social sciences, especially economics. But the social sciences dealt with the behavioural life of humans whose phenomenal states of being are radically different from the phenomena studied by the natural sciences. The point is that whereas the behaviours of the objects of the natural sciences were to be studied purely in terms of their physical or empirical manifestations, the objects of the social sciences required study not only of external or empirical manifestation of human behaviours but also the non-empirical causes of such behaviours.

Such behaviours were properly understood not only in terms of their physical causes but also in terms of their non-empirically accessible reasons. There was also a valuation component to human decision making and behaviour because most of human behaviour was non-instinctual – hence derived from conscious deliberation. And the conscious acts of such deliberation were necessarily evaluated along ethical lines. This was the dilemma faced by those theorists who wanted to establish economics on firm scientific grounds. The only solution that was possible at the time was to appeal to the seemingly empiricist theory of human decision making afforded by utilitarianism. The fundamental assumption of utilitarianism as an ethical system was that the ethical concepts of good and bad, desirable or undesirable were ultimately reducible to the concepts of pleasure and pain. And such were measurable according to the felicific calculus of Bentham, one of the founders of the ethical school of thought known as utilitarianism.

It was on this basis that the concept of utility was adopted by the budding science of positive economics. This approach also coincided with the individualist approach to economics as evidenced by the marginalist paradigm developed by Jevons (*Theory of Political Economy,*London, Macmillan,1879), Walras (*Elements of Pure Economics,* Lausanne, Corbaz,1874) and Menger

(*Principles of Economics,* New York,1871, and New York University Press, 1976[English translation]). It was against this background that the concepts of utils, cardinal (measurable) utility, maximisation of satisfaction, and so on, developed. The issue at stake was how to establish a scientific theory that explained the economic behaviour of human agents.

But this ambitious enterprise experienced failure because it was soon realized that utility could not be measured since it was a purely introspective appraisal determined by the agent himself or herself. Furthermore, there could be no publicly observable measuring instrument to determine such, given that interpersonal comparisons of utility were not possible in any determinable scientific sense. The solution was to drop the cardinal requirement and rely only on the consumer's ordinal ranking of preferences. This was the inception of standard utility analysis according to ordinal rankings. But again, this approach was based on the subjective utility rankings of the agent himself or herself.

The point is that this approach could not be tolerated for long by those theorists who were arguing that neoclassical economics, in its positive mode, should be a genuine science through and through. This is where Paul Samuelson's theory of revealed preference comes into play. Samuelson's theory of revealed preference as expressed in his paper (Samuelson 1938[a]):61-73) was presented as a solution to the problem or ridding scientific economics of those lingering mentalist assumptions embedded initially in cardinal utility theory then later in the ordinal utility configuration.

It is for this reason that Samuelson wrote that the aim of his paper was as follows: ' I propose, therefore, that we start anew in direct attack upon the problem, dropping off the last vestiges of the utility analysis. This does not preclude the introduction of utility by any who may care to do so, nor will it contradict the results attained by use of related constructs. It is merely that the analysis can be carried on more directly, and from a different set of postulates'. (Samuelson 1938[a] in Stiglitz [ed.] 1996:4).

Samuelson's goal was to offer a purely scientific theory of agent behaviour as an improvement over the Hicks-Allen programme founded on the ordinal theory of utility. And as he put it in the concluding paragraph of his paper: 'I have tried here to develop the theory of consumer's behaviour freed from any vestigial traces of the utility concept' (Samuelson 1966:13). The reason why Samuelson was concerned to do this is that he subscribed to the view that economics – in this sense, neoclassical economics – should be an avowedly empirical science whose methodology should subscribe to the research paradigm of operationalism.

What I propose to do in this paper is to critically evaluate Samuelson's attempt to rid economics of its ordinal utility foundations which he later developed in his 1948 paper, 'Consumption Theory in terms of Revealed Preference' (Samuelson 1966:64-74) as the 'revealed preference theory'. I will argue that the theoretical foundations of Samuelson's revealed preference theory are problematic and, as a result, Samuelson's goal of establishing a genuine science of economics is compromised. The issue is whether any agent choice (revealed preference) can be shown to be truly reflective of that agent's preferences. The issue also involves the question of whether Samuelson's revealed preference theory should just have focused on explaining agent choice without reference to preference – a subjective non-empirical concept. But then the goal of empirical science is to explain and predict phenomena in the empirical world. The question then is: has the revealed preference theory succeeded in this?

The more important question though is whether a genuine empirical science of economics is possible? If not, the claim that modern neoclassical economics is rightfully demarcated into a scientific side and a normative (prescriptive) side would be seriously cast in doubt. It would be obvious then that economics should properly redefine itself as traditional political economy did, according to which, issues of fact and value, efficiency and equity, social empathy, etc, were epistemologically bound together. There is the alternative solution to the issue though, given that human behaviour in all its dimensions is empirical. Human behaviour could be examined empirically and scientifically in much the same way that ethologists study animal behaviour and anthropologists study the behaviour of humans in traditional non-Western settings.

I will proceed as follows: first will be a discussion of what constitutes a proper scientific theory and it will then be determined whether Samuelson's revealed preference theory conforms to it – especially in terms of his adoption of operationalism as his theoretical paradigm. I will then discuss Samuelson's revealed preference theory and the responses to it by authors such as Houthakker, Sen, Wong, Varian, Grune, et al. Finally, I will argue that contemporary neoclassical theory as it evolved in the last several decades has been misguided in its attempts to establish neoclassical theory as a scientific theory. In this regard, neoclassical theory has been used as an ideological tool to defend a world of great economic disparities between people. This is the world of modern capitalism. I will then discuss the attempts by theorists such as Vanberg to salvage the neoclassical model as an adaptive system of human decision-making. But this approach would not solve the problem concerning the status of economics as a science. The argument

eventually leads to the conclusion that neoclassical economics is implicitly and essentially an aspect of value theory – utilitarianism; more specifically preference utilitarianism. But this outcome is certainly problematic given that human behaviour is empirically given. This is the basis for my foray into economic anthropology as a way of formulating a comprehensive analysis of human behaviour.

On the Practice and Theory of Science

For working scientists, an acceptable scientific theory is one which makes claims about some aspect of the empirical world that is subject to scrutiny by other scientists and repeatable under the experimental conditions described in the research. In other words, an orthodox scientific theory makes claims about the structure of some aspects of the world in terms of explaining the results of its attendant experiment. The experiment always assumes the validity of the attendant theory's principles, postulates, laws, etc, that explain and predict the processes in question. The point being made here is that for the working scientist, certain assumptions are implicitly made about scientific research. A successful scientific theory offers a picture and description of how some aspect of the empirical world actually is or at least appears.

The fact is that a successful theory is a confident plea for ontological certitude. When the theory predicts certain results and they consistently occur under experimental conditions, the assumptions, principles and laws in question are assumed to be valid and are assumed to be explanatory of the phenomena involved. When certain experimental results are called into question the issue is not that the goals of science are being questioned but that the experiments were poorly constructed or that the basic hypothetical assumptions are erroneous. Research results are called into question when experimental conditions cannot be replicated or predicted results are not forthcoming. A basic assumption held by research scientists is that the empirical world actually exists and is knowable.

Working scientists take assumptions about the empirical world for granted but that is not the case with those who study science theoretically. In the last few decades there have been questions raised about the growth of science. The early assumption argued for by the logical positivists is that science progressed cumulatively as its practitioners delved further into the structure of phenomena.

The positivist approach was the standard approach for researchers such as Carnap and Hempel into the structure and methodology of science. Their goal was to explicate the logic of science. Matters changed with the novel approach offered by Thomas Kuhn in his *Structure of Scientific Revolutions*

(Kuhn1962). Kuhn's basic thesis is that each successful scientific theory is founded on its own ontological and epistemological paradigm. And the way science makes progress, according to Kuhn, is by way of the scientific revolution. Each scientific theory is contextualised into its particular paradigm which carries its own internal dynamics. As research on the research phenomenon continues, anomalies and inconsistencies build up within the experimental structure. When attempts to solve the anomalies fail, crisis sets in and an extra-contextual new paradigm develops to offer novel explanations. It is in this way that scientific progress continues, according to Kuhn.

The key point in Kuhn's thesis is the claim that successful theories could be incommensurable, that is, incompatible. Critics of Kuhn argue that this approach renders scientific research relativistic, which is at odds with the objectivist goals of science. Karl Popper (1972) in *Objective Knowledge*, for example, has raised questions about this approach to scientific research on the part of Kuhn. According to Popper and others, the cardinal error committed by Kuhn is his assumption that valid scientific theories may be committed only to their paradigms and not to an underlying empirical reality.

In this regard, prominent theorists such as Popper (1968) argued for the method of falsification as the most appropriate means of testing scientific theories. The essence of Popper's falsificationist methodology is that a genuine scientific theory should contain real ontological content which could be shown to be confirmed or falsified within appropriate contexts. This approach, later fleshed out as 'critical rationalism', has been adopted by some theorists such as Mark Blaug (1980),who defines himself as being committed to Popper's falsificationist approach.

Given the continuing success of standard scientific practice founded on the principle that scientific theories and their constituent concepts must be anchored ontologically in the empirical world, debates among scientists concerning falsificationism, or whether observation terms and propositions are theory-laden or not, hardly resonate with working scientists. The rules of thumb for modern scientific practitioners are as follows: 1) Are claimed empirical results predictable according to background theory, replicable? 2) The mark of the success of a scientific theory is whether the theory successfully predicts and explains. 3) Replicable predicted outcomes are subject to experimental control in the form of the logical rules of *modus tollens* and *modus ponens*. 4) Repeatable predictions of particular theories signal that their constituent theoretical and observational terms do possess empirical content. Admittedly, there are areas of modern science, such as quantum mechanics, that researchers find problematic, but the field has never eschewed experimental analysis given that it continues to place great stock in predictions.

Economics and the Methods of Science

In the above discussion we have examined the working methodologies of working scientists in their field. It was obvious that contemporary scientific research is founded on how successful theories are in terms of their predictions. It is on this basis that theories that successfully predict are regarded as valid. And it is the predictive power of a theory that confers legitimacy on its equally important explanatory power. But what does a valid explanation entail? It entails assumptions, postulates, concepts, laws, and principles that are ontologically real. Theoreticians of economics have wrestled with this issue for some time now The key question has always been how to deal with the troublesome issue of prediction in human decision-making. The generally unsatisfactory results have as a result cast ontological doubt on the assumptions of economic theory.

Despite a reputation as a pure technician of neoclassical economic theory, Paul Samuelson actually made important comments on the theory of science as it applies to economics. The leading theory of science during the period of Samuelson's intellectual development was the operationalism of physicist Percy Bridgman, which he formulated in his text *The Logic of Modern Physics* (Bridgman 1927). The basic idea behind operationalism was that the scientific tenor of a theory was determined by its operational significance, that is, by an empirical demonstration of the theory in operation. Thus for Bridgman, the concept of length was operationally defined when an object was actually measured (Bridgman 1927:5).

Another aspect of Samuelson's operationalism was 'descriptivism', which states that scientific theories merely describe phenomena as they present themselves empirically. Consider Samuelson's reply to Fritz Machlup's claim that the bulk of economic theory is based on counterfactual assumptions and 'contains only theoretical constructs and no operational concepts and yields results which we hope point to elements of truth present in complex situations' (Fritz Machlup 1966 in Stiglitz [ed.]:760). Samuelson writes: 'Scientists never "explain" any behaviour by theory or by any other hook. Every description that is superseded by a "deeper explanation" turns out on careful examination to have been replaced by still another description, albeit possibly a more useful description that covers and illuminates a wider area' (Samuelson 1966:762).

Thus we see that Samuelson is strongly committed to descriptivism as the goal of his operationalist methodology. It should be noticed in this regard that operationalism is synonymous with explanation. It is on this basis that Samuelson takes issue with the methodology of economics offered by another prominent theorist of economics, Milton Friedman. Friedman (1953:3-43)

argues that the validity of a scientific theory depends essentially on its predictive tenor. In this regard, Friedman's methodology has rightfully been called instrumentalist. For Friedman, the assumptions of a theory are of minor import in terms of their empirical content. This position is obviously at odds with Samuelson's strict operationalist descriptivism. Samuelson refers to Friedman's instrumentalist methodology as the 'F-Twist'. In reply to Friedman, Samuelson argues that the predictions C of some theory B constitute an integral part of the theory itself. But B must contain its own set of assumptions, A, which must possess the same realism content as C itself. In other words, for the descriptivist Samuelson, the assumptions of some theory B are logically and empirically connected to its predictions, C. Thus, the predictive results of a theory are entailed by the realism or unrealism of its assumptions. This is the basis for Samuelson's attempt to ground fundamental economic theory on foundations that are empirically realistic.

An interesting discussion of the methodological debate between the operationalism of Samuelson and the instrumentalism of Friedman is provided by Stanley Wong's critique of Samuelson's scientific methodology and his revealed preference theory (Wong 1973, 1978). Wong's methodological approach is that of a critical empiricist given his assiduous dissection of Samuelson's epistemological wrestling with the concepts of utility theory and revealed preference. But Wong is committed to the idea of economics as a science and does not venture further than mere critique. The question is: if Samuelson's revealed preference approach to agent decision-making is problematic, then is it because of structural problems with neoclassical economics itself or otherwise?

Samuelson and Revealed Preference Theory

I have sketched a background to how Samuelson arrived at his operationally descriptivist approach to economic theory. It is on this basis that he sought to establish neoclassical theory on operationally descriptivist foundations. Consider Samuelson's reply to Fritz Machlup's 'Professor Samuelson on Theory and Realism' (Samuelson 1966:758-761): that the operationalist approach led to the development of the revealed preference theory that provided 'the most literal example of a theory that has been stripped down to its bare implications for empirical realism' (765). Samuelson then claims that his 1938 paper proved that the weak axiom of revealed preference showed that 'the regular theory of utility maximisation implied for the two-good case, no more and no less than that "no two-observed points on the demand functions should ever reveal the following contradiction of the Weak Axiom'".

According to Samuelson (1938), the purpose of his novel approach was to lead eventually to the 'dropping of the last vestiges of the utility analysis. This does not preclude the introduction of utility by any who may care to do

so, nor will it contradict the results attained by use of related constructs. It is merely that the analysis can be carried out more directly and from a different set of postulates' (Samuelson 1966:4).

But what is of much importance is the following: 'All that follows shall relate to an idealised individual – not necessarily, however, the rational homo-economicus.

I assume in the beginning as known, i.e., empirically determinable under ideal conditions, the amounts of *n* economic goods which will be purchased per unit of time by an individual faced with the prices of these goods and with a given total expenditure. It is assumed that prices are taken as given parameters not subject to influence by the individual' (Samuelson 1966:4).

The agent or economic actor in this instance, according to Samuelson, is an 'idealised individual'. Assumedly what Samuelson means by this is that the agent as 'idealised individual' behaves consistently and according to certain prescribed conditions as already required for ordinal utility theory. These conditions as postulates can be summarised as: i) the idealised agent's demand functions are single-valued in that the agent will always select the same basket of goods, ii) the consumer's demand functions are 'all homogeneous of degree zero'(4), i.e., 'the consumer's behaviour is independent of the units in which prices are expressed' (5). The third postulate states that 'in any two price and income situations and corresponding quantities of consumer's goods' the consumer behaves consistently in that if some batch of goods X is chosen over another batch Y, the consumer does not simultaneously choose Y over X.

In a later addendum (Samuelson 1938[b]:353-354) to his 1938 (a) paper, Samuelson then argues that postulates 1 and 2 are redundant because they are implied by the third postulate. In sum: Samuelson's theoretical goal is to achieve the same results of ordinal utility theory without appeal to the psychologistic concept of utility.

Samuelson's fundamental postulate of RPT, known as the 'weak axiom of revealed preference' (WARP) is as follows: for all pairs of items X0, X1 and a pair of prices P0,P1, if X0 Rj X1 then not X1RjX0 where X0 Rj X1àP0X0e"P0X1 given income I0. This means that if some individual chooses one set of items over a second set, he does not at the same time choose the second set over the first set. This is the third postulate of Samuelson's programme. As Samuelson put it:'Woe to any who deny any one of the three postulates here! For they are, of course, deducible as theorems from the conventional analysis. They are less restrictive than the usual set-up and logically equivalent to the reformulation of Hicks and Allen' (Samuelson 1966:12).

We recall that the conventional analysis requires 1) the single-valuedness of demand functions, 2) homogeneity of degree zero of demand functions, and 3) the negative semi-definiteness of the substitution matrix. Samuelson was able to deduce this from his weak axiom of revealed preference. But there would certainly be a problem in deriving the intended results if the agent's demand functions include the utility concept. The reason is that after all, Samuelson's WARP was designed to overcome the problem of utility.

It should be noted that although Samuelson did not mention the term 'revealed preference' in his 1938 paper he does indeed use it in a subsequent 1948 paper wherein he attempts to derive indifference curves from a set of revealed preference observations. But let us return to Samuelson's claim that the major results of the Hicks-Allen ordinal theory approach could be deduced from the WARP.

There is an evident problematic here given that the agent demand functions that confirmed ordinal utility theory themselves included mentalist utility-engendering variables such as the subjective tastes of the agent as consumer and advertiser. Subjective tastes determine the consumer's choice of items that are substitutes at the same price. It is also the tastes of advertisers that seek to recommend choices among items that are similar in price and quality. All this is evident from the formal demand function expressed as Qx =A+BxPx where A stands for á (residual term) and Bx stands for B1P1 + B2P2 + B3P3+…+BnPn. Thus when Samuelson claims that his third postulate implies the demand functions of postulates 1 and 2, he must explain why such demand functions can be differentiable without appealing to the subjective concept of utility. Furthermore, it is difficult to see how those differentiable demand functions could be effected without appealing to 'an increasing rate of marginal substitution' which is exactly what Samuelson's RPT is devised to avoid.

According to RPT only empirically observed behaviour counts. Thus there is no need for hypothetical sets of single-valued and homogeneous of order zero demand functions. How does Samuelson know what the revealed preferences of any individual would be without actually witnessing such. The overall problem here is that Samuelson's novel discourse derives from his *idealised individual* whom he did not define in terms of his or her connection to real, empirically observable individuals. This idealised individual is assumed to behave consistently and conform to the choice paths required of postulates 1 and 2.Surely, this novel discourse of Samuelson is hardly empiricist in approach.

In his 1948 paper 'Consumption Theory in Terms of Revealed Preference' (Samuelson 1948:243-253) Samuelson attempted to demonstrate that a further

conciliation could be established between RPT – according to Samuelson shorn of 'the last vestiges of utility analysis' – and ordinal utility theory by deriving indifference curves from a set of revealed preference points for his idealised individual. Samuelson begins his 1948 paper thus: 'A decade ago I suggested that the economic theory of consumer's behaviour can be largely built up on the notion of "revealed preference". By comparing the costs of different combinations of goods at different relative price situations, we can infer whether a given batch of goods is preferred to another batch; the individual guinea pig, by his market behaviour, reveals his preference pattern – if there is such a pattern' (Samuelson 1966:64).

Samuelson's goal in this paper was to derive indifference curves for the set of choices or revealed preferences that individual agents make. Note that Samuelson's effort in this paper was to offer an alternative to Ian Little's (1949) 'ingenious proof that if enough judiciously selected price-quantity situations are available for two goods, we may define a locus which is the precise equivalent of the conventional indifference curve' (Samuelson 1966:64).

So it seems that we have come full circle. Samuelson began his critique of ordinal theory with the intention of ridding fundamental economic theory of its 'last vestiges of the utility analysis' but still nostalgically attempted to show that the results of ordinal theory could be derived from his postulates of revealed preference. Later in his 1948 paper Samuelson attempted to show that agent indifference curves could be derived from his postulates of revealed preference. The strategy here was to build up a set of revealed preference points by way of the 'Cauchy-Lipschitz Process of Approximation' (Samuelson 1948:66), then join such points in such a way that the agent's indifference curves are ultimately revealed. This approach offered a solution 'indifference curve' from *below* as Samuelson offered. Samuelson complemented the Cauchy-Lipschitz approach with another approach that offered a mode of constructing indifference curves from *above* (Samuelson 1948:69).

But all this is in vain and only ends up compromising Samuelson's original programme. The point is that if one constructs an indifference curve from supposed revealed preferences that coincides with those of ordinal utility theory, then one can explain the shape of the resultant indifference curve only by appeal to *the increasing rate of marginal substitution*, which is exactly what Samuelson sought to eliminate from consumer analysis in his 1938 paper. According to standard ordinal utility theory, the increasing rate of marginal substitution of some good X for Y (MRS_{xy}), i.e. dy/dx equals MU_x/ MU_y., i.e., the ratio of marginal utilities. So the concept of utility necessarily enters the picture again once indifference curves that mirror those of ordinal theory are introduced. The concordance with ordinal utility theory on the

part of Samuelson's attempt to construct indifference curves from the theoretically revealed preference of the *idealised individual* has led theorists such as Houthakker (1950) to claim that Samuelson engaged in a programmatic *volte face* when he attempted to reintroduce ordinal theory into his 1947 and 1948 theorising.

What then is the problem? The problem, it would seem, is that to attempt to explain and predict human decision-making simply by limiting theory construction to observed choices of agents just would not work. Unless humans are mindless – take this in the literal sense – robots we cannot hope to explain human decision-making without appeal to empirically inaccessible concepts such as reasons, motives, preferences, utility evaluations, and so on. But this is a problem not only for neoclassical economics but also for other sciences that deal with human behaviour such as psychology and history. In the case of history, can the historian explain events without appeal to non-empirical concepts such as reasons and motives?

Axiomatic Revealed Preference Theory

According to Axiomatic Revealed Preference Theory, there are three basic axioms that purportedly describe and explain choices: 1) the Weak Axiom of Revealed Preference (WARP), 2) the Strong Axiom of Revealed Preference (SARP) and 3)the Generalized Theory of Revealed Preference (GARP, Sydney Afriat, 1976, *The Combinatorial Theory of Demand*). There are also a set of preference relations that are operationally relevant. They are reflexivity, transitivity, anti-symmetry, and completeness.

Assume the case of a two-good choice schedule where some agent A is constrained in his choice of items by an income I . Assume that A, given I, can purchase some Xi at time To at prices Pi at time To. Assume too that if A can purchase Xj at time T then Xj may also be purchased at To. Therefore, for all Xj(i‘“j), if PiXie”PiXj then Xi is revealed preferred Xj.

This choice path of the individual agent may be expressed as follows: XiRXja”PiXie”PiXj. We may extend this idea to include the notion of indirect revealed preference. This means that Xi is indirectly preferred to Xz if the two bundles are connected[C] by an indirect chain of bundles. Thus Xi C Xj a”Xi C Xo, C…C, Xn C Xj.

Choice Axioms of Revealed Preference

Samuelson (1938) was able to articulate his postulate of revealed preference only on the assumption that his 'idealised individual' conforms to certain modes of decision-making. Samuelson's assumption was that his 'idealised agent' behaves consistently. What this means for WARP, SARP and GARP is that the idealised agent's choices should conform to basic axioms of i)

reflexivity, ii)transitivity, iii)completeness, and iv) acyclicity. These axioms are expressed according to the following preference relations.

Reflexivity: (X)(X Rj X)
Transitivity: (X)(Y)(Z)[(X Rj Y Rj Z!X Rj Z)]
Completeness : (X)(Y)(X Rj Y v Y Rj X)
Acyclicity(antisymmetry) : (X)(Y)(Z)[(X Rj Y Rj Z)'" Z Rj X

The upshot of all this is that the idealised individual of RPT is required to conform to the above set of axioms commonly referred to as the postulate of rationality as he makes his choices according to the axioms of revealed preference theory.

What we have here then is a neoclassical choice space populated by individuals without mental structures who conform to certain programmatic rules. In other words, the neoclassical agent of RPT is none other than a rational robot. But humans are much more than rational robots programmed according to the postulate of rationality. Unlike robots, when humans make choices or reveal their preferences they must appeal to considerations of motive, reasons and utility, if their choices are to be explained or understood by themselves and others.

The reason for this approach is that genuine science seeks not only to describe phenomena but also to explain them in terms of background theories with their constituent laws, postulates, and axioms. The same must hold for those sciences that deal with human behaviour. This explains why Samuelson had to augment his 1938(a) with a foray into indifference curve analysis by way of a concatenation of revealed preference points. The same observation may be applied to Samuelson's 1950 paper, 'The Problem of Integrability in Utility Theory'(Samuelson 1950:355-385). Even Houthakker, who formulated the SARP, noted that ordinal theory when excised from neoclassical theory in Samuelson's 1938 paper once again became fundamental to that theory(Houthakker 1983:63).

The point is that once Samuelson agreed that RPT merely complemented ordinal theory and was not a replacement for it, we were faced with a puzzling quandary. The question is as follows: what then is the theoretical point of RPT if it merely complements ordinal utility theory? The answer is that Samuelson believed that he was ridding agent choice theory of *the last vestiges of the utility analysis.* But this could not be the case given that both his postulates 1 and 2 entailed by postulate 3 implicitly include utility analysis. Differentiable demand functions make sense only when its agents make choices explainable only by appeal to the utility concept. We have already

pointed out that Samuelson's 1948 attempt to construct indifference curves from revealed preference points on a budget line further compromised his position. Agent indifference curves can be explained only by appeal to utility considerations.

The point of the above discussion is to demonstrate that Samuelson actually failed in his attempts to establish agent choice theory – and by extension neoclassical economic theory – founded only on the empirically observable choices of agents themselves. Samuelson eventually had to reincorporate ordinal utility theory into his analyses.

We recall that the key actor in Samuelson's choice theory programme is the *idealised individual who is consistent in his or her choices and conforms to certain axioms and postulates.* Samuelson claims that this idealised agent is 'not necessarily, however, the rational *homo-economicus'*(Samuelson 1938[a]:4). But this 'idealised individual' is necessarily 'the rational *homo-economicus*'. Any idealised agent who behaves consistently and conforms to the theorist's idea of modelled behaviour is equivalent to a rational agent.

Revealed Preference Theory and its Aftermath

Samuleson's total programme could be summarised as consisting of three distinct papers: 1928(a), 1948, and 1950 ('The Problem of Integrability in Utility Theory'). What is obvious is that there are two distinct methodological approaches on the part of Samuelson. His 1938(a) paper was an attempt to replace ordinal utility theory with a strictly operational RPT. But his 1948 paper reintroduced the idea of ordinal theory when he tried to derive agents' indifference curves from actual RPT points. The result of this was to demonstrate a logical connection between RPT and ordinal theory. In his 1950 paper, Samuelson tackled the so-called integrability problem as it relates to ordinal theory. The goal was to demonstrate that ordinal theory, as theory, entailed RPT as its empirical instantiation. Samuelson recognised in his analyses that WARP did not offer a satisfactory answer to the question of the empirical instantiation of ordinal theory. The point was WARP was unable to deal with the issue of cyclic choices. The matter was solved by Houthakker with his formulation of the strong axiom of revealed preferences (SARP) which allowed only transitive inferences. We have again here a reinforcing of the strict rationality assumptions of an augmented RPT. The final statement by both Samuelson and Houthakker was that ordinal utility theory was the theoretical

Infrastructure from which was derived an operational RPT. With Houthakker's SARP a logical equivalence was established between ordinal utility theory and RPT.

One of the first sustained critiques of Samuelson's position is that of Stanley Wong (1978). Wong's key point against Samuelson is that Samuelson's methodology founded on 'descriptivism and operationalism is indefensible on logical and historical grounds'(Wong 1978:127). Wong supports his critique on methodological grounds: Samuelson's methodology of descriptivism 'ideally requires a theory to be logically equivalent to its consequences'(Wong 1978:126). But for Wong descriptivism is problematic because 'a theory is not ideally equivalent to its empirical consequences'(Wong 1978:126). And the distinction between theoretical and observation terms on which the equivalency of ordinal utility theory and RPT is founded cannot be maintained. For Wong, 'all observation terms are theory-laden'(Wong 1978:126). On more prosaic grounds the issue is this: if ordinal utility theory and RPT are logically equivalent hence interchangeable, then what is the point of RPT if ordinal theory is just as operationally effective? Assuming that Wong's critique is valid, the main problem is that he does not offer an alternate theory that would explain human economic decision-making.

Despite the problematic of Samuelson's revealed preference theory and the issue about which it was developed and formulated there are theorists who think highly of it. Hal Varian, for example, writes the following: 'Samuelson's 1938 theory of revealed preference has turned out to be amazingly rich. Not only does the SARP provide a necessary and sufficient condition for observed choices to be consistent with utility maximisation, it also provides a very useful tool for empirical nonparametric analysis of consumer choices'(Varian 2006:18, pre-publication draft).Varian informs us in his paper that RPT is very much alive with his 2005 research on the prevalence of the theme yielding 997 articles.

The ultimate test of a scientific theory is the quality of its predictions, i.e., do the theory's predictions conform to the theory. It is also a fact of scientific research that when a theory makes successful predictions the proffered explanations for the predicted phenomena gain in epistemological authority. In this connection, the empirical results from testing the generalised version of RPT, i.e., GARP have not been encouraging.

Till Grune (2004:396)), for example, argues that empirical test results show that 'after 66 years of work, the preference framework and the maximization hypothesis still do not have a firm empirical foundation'. Grune makes this claim because experiments with human agents show 'high violation rates' of the axioms of RPT (Grune 2004:390). In support of his claim, he cites Reinhard Sippel (1997:1431-1444) and Aurelio Mattei (2000:487-497) both of whom claim that the neoclassical theory can be easily shown to be falsified on account of the large number of agent violations.

According to Grune, the experimental test results, controlled for time duration and price changes, show that according to different experiments one quarter to two thirds of the test persons violated GARP. In the experiments that tested for SARP violations (Sippel 1997) the violation rate lay between 73 per cent and 90 per cent.

Thus the main problem is a theoretical one. A similar argument has also been made by Daniel Kahneman and Richard Thaler (2006:221-234). Clearly, SARP and GARP have been shown to be not always in accordance with the actual choices of economic agents. It can also be argued that the axiomatic requirements of completeness, transitivity, and non-acyclicity are not shared by the three RPT axioms. WARP and GARP, as is stated, do not preclude acyclic choices.

The crucial point at this juncture is that without appeal to the agent's preferences or subjective utility schedule, it would just not be possible to determine how any agent arrived at making the choices he or she did. A particular set of choices, *ceteris paribus*, may conform to SARP but we would have no *prima facie* explanation of this conformity. Also, how would genuine inferential errors or change of tastes, or just arbitrary decision-making be detected if choices alone were available?

One might also consider cases of pondered indifference between alternatives before choices were eventually made. There could also be cases where choices were made on a whim or as a result of serious deliberation that took into consideration new variables. There are also binary choice situations in which both choices represent two sets of non-intersecting choice criteria as in the case of the student who is conflicted between attending two different universities for a set of entirely different reasons in each case. This is clearly a situation in which there is no comparative preference basis for decision-making.

It is for the above reasons that RPT, as originally proposed by Samuelson and Houthakker, was seen as not adequate for a the formulation of a complete theory of agent choice. What eventually had to occur was the re-forging of links between empirically observable choices and ordinal utility theory. As Samuelson himself (1972:256) put it in: 'From the beginning I was concerned to find out what *refutable* hypotheses on the observable facts on price and quantity demanded were implied by the assumption that the consumer spends his limited income at given prices in order to maximize his ordinal utility'.

Choice and Preference

When the economist as social scientist formulates theories he or she must necessarily begin with what is empirically observable. And what is empirically observable are merely the choices that individuals make. The choices that humans make are not random but based on calculations and forethought in

most cases. In the case of economic decision-making the economic agent first calculates his preferences among alternatives and then effects a choice. It is this pre-choice set of mental calculations that serves as the basis of ordinal utility. But the old problem of how to quantify or to give an account of utility remains. Furthermore, given that any proper scientific theory must offer explanations and predictions, the question then is: how are explanations of agent behaviour possible without appeal to mentalist concepts such as utility? This is the basis on which Samuelson was forced to return to the theory of ordinal utility to allow for the construction of explanatory theories of agent choice. But given that human decision-making springs from non-accessible human mental states, and given that the choices individuals make may vary greatly even when the goals in question are the same, neoclassical theory had no alternative but to posit an idealised *homo economicus* whose choice paths constitute the basis on which neoclassical economic theory is constructed. The question then was: what kind of conceptual framework would shape the behaviour of the idealised *homo economicus*? This conceptual framework was founded on the concept of rationality. But an appeal to the concept of rationality, though leading to logically valid formal structures, compromises the scientific tenor of neoclassical microeconomic theory. What this yields is a theoretical structure that is necessarily prescriptive.

Rationality

One of the fundamental assumptions of neoclassical economic theory is that economic agents, as empirical homologues of *homo economicus* or Samuelson's idealised individual, choose rationally. In theoretical terms this means 'behaviour in accordance with the postulates of rationality'. Or more specifically, the rational agent makes consistent choices whose goal is the optimisation of some mathematical function. In the case of the individual agent as consumer, it is the utility function that is maximised.

The postulate of rationality when expressed in formal terms requires that the agent's choices conform to the completeness, reflexivity, and transitivity axioms. The agent is also required to rank items according to rules of weak preference or strong preference. Thus it is evident that the postulate of rationality is, indeed, a prescriptive postulate according to which the economic agent must conform. In this regard, the postulate of rationality is no different from, say, any concocted postulate of goodness. A postulate of 'goodness' would be founded on the concept of an ideally good individual who would make certain choices and decisions consistently.

But just as with the postulate of rationality, conformity to the postulate of goodness would witness many deviations from the prescribed rule. Thus

contrary to the intent of the founders of neoclassical economics, who wanted to establish a genuine science of economics, the adoption of the rationality postulate as its central theoretical plank compromises the whole enterprise. As theorist of economics, Daniel Hausman, puts it: 'Rationality is a normative notion concerning how people ought to choose, prefer, or reason. So it may seem surprising that it has a large role in positive economics, which is concerned with how people do in fact choose. Since rationality is different from morality, it may also seem surprising that rationality plays a large role in normative economics' (Daniel Hausman and Michael McPherson 1996:38).The truth is that whether for 'positive' or 'normative' economics, choice path rules that determine the prescribed behaviour of agents must first be established. It is 'rationality' according to the theorist that determines such rules – reflexivity, transitivity, completeness, etc.

Despite the normative content of the foundational postulate of rationality, neoclassical economic theory as expressed in university textbooks and journal articles continues to maintain this normal science paradigm despite evident predictive and explanatory anomalies. One way to save the theory would be to collapse it into some kind of welfare economics for the individual and for society as a whole. In this way, economics would be viewed purely as a policy discipline whose function is to formulate theories of how to increase human welfare singly or generally.

Yet neoclassical theorists would hardly want to countenance such, given that their research paradigm is committed to the establishing a scientific theory of human choice. But even if neoclassical economics were reduced to a purely normative theory – as suggested above – there would still be need to establish its structure on ontologically certifiable assumptions. A basic assumption in this regard would be that individuals as decision-making agents be constantly making economic choices. Another assumption would be that individuals make their choices consciously and based on mentalist calculations. Such mentalist calculations would also be explained in terms of psychological concepts such as reasons and motives. This is where the methodological problem confronted by neoclassical theory arises: how to offer a proper ontological account of agent choice in terms of explanation and prediction. This is all that the generic methodology of science demands.

On the Problematic of Rationality

The problem with the concept of rationality is that despite its ontological status theorists of neoclassical economics would seem to have no viable alternative. The result is there have been ongoing attempts to salvage the concept on account of its crucial role in neoclassical theory. Some theorists

have argued for a kind of purely formalistic role played by the postulate of rationality (Boland 1981. Alexander Rosenberg (1976, 1992), on the other hand, takes issue with the scientific tenor of neoclassical theory in terms of explanation and prediction – the basic requirements for any genuine scientific theory. Rosenberg (1976), first raises issues with the supposed causal laws of economics, and then eventually comes to the conclusion that neoclassical microeconomics is a form of applied mathematics (Rosenberg 1992).

Or consider Till Grune's (2004:396) comments that despite the fact that 'after 66 years of work, the preference framework and the maximization hypothesis still do not have a firm empirical foundation. Hardcore empiricists might draw the consequence that economics is therefore not a science at all'. Grune's recommendation is noteworthy: 'Instead, economists should admit that their science operates with theoretical concepts, which never can be fully defined on terms of observable parameters. Such an admission would leave economics in good company. The concept of the gene in biology, and the concept of the inter-atomic bond in chemistry are of similar type, and few deride these sciences for operating with them'(Grune 2004:396)

One must take issue with Grune's claim here though. Grune is in error to argue that the theoretical concepts of neoclassical economics are on par with those of the physical and biological sciences. The fact is that while the gene and the inter-atomic bond possess real empirical content this is not the case with the concept of rationality. Like 'goodness', rationality is not a natural attribute of any empirical phenomenon.

On Bounded Rationality

The problematic of rationality is further instanced by the fact that it has been long established in practice that 'rational economic man', the central actor in neoclassical economic theory, represents no more than a formal idealisation of economic decision-making. This understanding of economic decision-making was developed by Herbert Simon in a set of papers that comprehensively sought to replace the behaviour of *homo economicus* of the classical model with that of an agent whose decision-making options were constrained by lack of full knowledge of the economic environment. In other words, rationality under such constraints are 'bounded' and all the agent can hope for is 'satisficing' (Simon 1955, 1959, 1982). Consider Simon's approach to the problem: 'Broadly stated, the task is to replace the global rationality of economic man with a kind of rational behaviour that is compatible with the access to information and the computational capacities that are actually possessed by organisms, including man, in the kinds of environments in which such organisms exist' (Simon 1955:99). This leads to Simon's

observation that defined rational behaviour should not be seen only as substantive rationality but also as procedural rationality which greatly extends the empirical foundations of neoclassical economics (Simon 1986:212).

Simon's basis for this attempt to transform neoclassical economics into a more empirically grounded discipline is that its predictive, and hence explanatory, record has not been encouraging. Simon's thesis deserves much consideration given that his step-by-step approach to decision-making has become central to game theory and other decision theory areas.

But it is exactly at this point that Simon's programme encounters a problem. The attempt to redirect economic theory from the formal neoclassical model of rational choice to one founded on the principle of procedural rationality and the actual psychology of human decision-making encounters the same problem that Simon underscores with standard neoclassical theory. The reason is that human behaviour is quite complex and attempts to explain and predict decision-making from the standpoint of psychology would tend to compound the issue further. Thus how should one explain what the theorist as observer would describe as decidedly irrational behaviour; or behaviour that accepted the theorist's definition of rationality but was consistently irrational in terms of committed errors?

Given that the standards of rationality that agents adhere to derive maximally from their learning environments, as opposed to being the results of instinctual promptings, Simon's programme reduces to the standard neoclassical theory, Simon's theory of satisficing would seem to be none other than the classical agent making choices under particular constraints. But the goal is still the maximisation of expected utility. So what then is one to make of Simon's claim that economics without recourse to empirically based psychological and sociological research is 'a one-bladed scissors'?

The point is that despite a plea for an economics reliant more on empirically observed agent choice than on theoretical formalism, Simon must still seek recourse to the postulate of rationality if his theories are to have any semblance of explanatory and predictive power. After all, whenever any agent effects a choice there must be prior moments of deliberation according to some normative schedule. But given that matters are compounded by the fact that individuals may vary in terms of their schedules of rationality and that they are prone to errors, bounded rationalists such as Simon are faced with a formidable task – that of constructing separate rationality schedules for each agent.

But Simon's programme is preferable to that of standard neoclassical economics because it recognizes that economics cannot define itself as an empirical science unless it has its theoretical foundations based in the empirical

world and not on the decision-making of an idealised rational economic man. Simon has approached the problem in the correct way but success is unlikely given the enormity of the empirical logistics involved.

This may be the reason why theorists of formal economics have done little to replace the construct of rational economic man with that of the agent as a cognitively fallible decision-maker who can only 'satisfice' on grounds of his or her 'bounded rationality'. Human behaviour is much too complex and motive-driven to be dynamically plotted according to some pre-established programme of decision-making. This approach is well summarised by Esther Sent as follows: 'In economics, Simon has become mostly known for his razor-sharp criticism of the rationality postulate. In particular he criticized the four basic assumptions of neoclassical economics' (Sent 2004:313). According to Sent, Simon argued that 'the mind functions mostly by applying approximate solutions to problems'(Sent 2004:313). Thus humans in their decision-making adopt 'satisficing strategies' rather than conform to some 'maximisation of utility function'(Sent 2004:313). But because it is much more difficult to construct such satisficing strategies for separate individuals, the continuing orthodoxy among economists is to model economic decision-making as if it were some form of mathematical logic.

According to Ariel Rubinstein, who has adopted Simon's paradigm of bounded rationality, the purpose of economic models are as follows:

> 'Models of economic theory are meant to establish "linkages" between the concepts and statements that appear in our daily thinking on economic situations' (Rubinstein 1998:191). Rubinstein contrasts this with what he perceives as Simon's idea that economics should aim at creating predictive models founded on testable empirical evidence (Rubinstein 1998:191). Yet as was pointed out above, Simon's more empirically-minded approach would still be at loss to formulate theories of agent decision-making without first establishing some normative framework from which the economist who embraces the satisficing paradigm would operate.

Vanberg's Evolutionary Rationality

Viktor Vanberg (2004) argues that the rationality postulate may be salvaged by regarding it as 'an alternative *evolutionary* outlook at purposeful human action that, as I suppose, captures much of what appears to make the rationality postulate so attractive to economists but allows one to escape the ambiguities that have notoriously plagued the rationality postulate' (Vanberg 2004:2).Vanberg begins his critique with the observation that the rationality idea could be divided into what he refers to as the 'rationality principle' and the 'rationality hypothesis'. The rationality principle for Vanberg merely states that all human action is rational in the sense that it is purposeful. This is the

definition of rationality that was proposed by Ludwig von Mises (1949) in his praxeological approach to economics. But as Vanberg would state: 'the rationality principle by itself cannot serve as the fundamental behavioural conjecture of an explanatory, empirically contentful theory' (Vanberg 2004:3). In this regard, the rationality principle may be regarded only as 'a definitional statement or as a heuristic device'(Vanberg 2004:3) Thus the rationality principle may be useful but problematic on account of its lacking in empirical content. 'Only by adding additional refutable assumptions can one turn the rationality principle into an empirically contentful hypothesis' (Vanberg 2004:3-4).

According to Vanberg, 'rationality' as applied to empirically refutable hypotheses in the sense of making global and empirical claims about the choices of agents, suffers from a disconnect between theory and empirical results. This is the case with the well known maximisation hypothesis which 'is in such apparent conflict with behavioural reality that it is rarely ever claimed to be descriptive of actual human behaviour' (Vanberg 2004:4).

There have been noteworthy attempts on the part of theorists such as Gary Becker (1976), who attempts to explain all of human behaviour in terms of what seems like a version of the rationality principle but applicable to human behaviour in terms of income and price effects rather than subjective tastes. Vanberg, however, points out that this global approach to human economic agency does not alter the fact that Becker's 'economic or rational choice approach to behaviour' is founded 'on no more than the heuristic rationality principle' (Vanberg 2004:7). Vanberg concludes his commentary on Becker with the observation that Becker's 'assumption of individual rationality…is specified in a way that makes it indistinguishable from the empirically rationality principle' (Vanberg 2004:7).

Given the evident problematic with the orthodox rationality model as an acceptable explanation of human decision-making, neoclassical economists still persist in its application. As Vanberg puts it: 'Even if they are not entirely happy with their rationality, to them there is no really attractive alternative in sight' (Vanberg 2004:10).

Vanberg rejects the idea that there are no viable alternatives and proposes what he refers to as an 'evolutionary outlook at human behaviour' in the form of 'the paradigm of program-based behaviour' adapted from biologist Ernst Mayer's thesis that 'intentional, goal-or-purpose-seeking behaviour can be viewed as guided by programs or instructions *encoded in the agent* for what to do (or not to do) in certain types of situation' (Vanberg 2004:11). What this evolutionary approach achieves is as follows: the paradigm of program-based behaviour appeals to the concept of rationality to explain behaviour that is based on agents engaging in purposeful action that is constantly seeking to adapt to the conditions of the environment. What we

have here is a kind of rational or purposeful decision-making that proceeds according to the principle of repeated trials when intended goals are not achieved.

Vanberg amplifies his evolutionary theory of adaptive decision-making by further appeal to J.H. Holland's (1992a) theory of rule-based adaptive agents. According to this theory, agents made decisions on a kind of iterative feedback process based on 'rules that anticipate the consequences of certain responses'(Vanberg 2004:13). These rules serve as 'internal models' that may be tacit or overt. Tacit models behave according to the principle of autonomous stimulus and response, as in the case of, say, a 'bacterium that "moves in the direction of a chemical gradient implicitly predicting that food lies in that direction"' (Vanberg 2004:13). On the other hand, Vanberg informs us, Holland's 'overt internal models inform the kind of deliberative choices on which rational choice accounts tend to focus' (Vanberg 2004:14).

Vanburg further explicates Holland's adaptive learning approach by pointing to his 'bucket brigade algorithm' which appeals to induction that 'makes a task manageable that otherwise would surely be beyond the capacity of boundedly rational agents, namely the task of keeping track of the success record of a complex repertoire of rules that are activated, in varying combinations, as components of internal models of current problem situations' (Vanberg 2004:15). A key point cited by Vanberg that he adopts from Holland is as follows: 'for complex adaptive systems in general and, in particular, for markets that are composed of intelligent, learning human beings "there is no way to predict the overall behaviour by looking at the behaviour of an *average individual*'" (Vanberg 2004:16). The solution is to adopt the 'paradigm of program-based' behaviour.

Despite the evidence of what actually occurs, economists still appeal to the principle of perfect rationality because it offers an explanation of how markets ostensibly operate. As Vanburg puts it: 'the assumption of perfect rationality is, from this perspective, not so much a conjecture about the cognitive and calculative capabilities of human beings *per se*, but a conjecture about the working properties of markets as social arrangements' (Vanberg 2004:17).

On this basis those who win in the market game are rational choice makers who have effected choices in conformity with the idea of perfect rationality. Vanberg's response to this is that this limited theory of goal directed decision – making is inadequate even when expressed as the 'rational expectations' theory of R.A. Lucas. The 'rational expectations' theory is evidently then just another form of the feedback-adaptive model of Holland's already discussed by Vanberg. According to Lucas, as cited by Vanburg, economics

consists of a set of decision rules that are 'steady states of some adaptive process, decision rules that are found to work over a a range of situations and hence are no longer revised appreciably as more experience accumulates' (Vanberg 2004:20-21).

Vanberg, however, does not see this as a solution given the extended range of the rationality principle as it has been adopted by other areas in economics and the other social sciences. Vanberg argues that 'such self limitation would clearly be in conflict not only with the ambition of modern approaches in economics that – like public choice, the new institutional economics, law and economics and others – seek to extend the economic approach beyond the study of market behaviour, it would also conflict with ambitions to understand the innovative creative dynamics of market processes' (Vanberg 2004:21).

> The point Vanberg makes is that economic theory ought to adopt a 'more common behavioural paradigm' to handle the general social phenomena and behaviours that the social sciences in general deal with. But Vanberg's more comprehensive goals may be overly optimistic here given the methodological problems that some researchers in areas such as political science encounter.Consider the following from Green and Shapiro (1994:9): 'Furthermore, rational choice hypotheses are too often formulated in ways that are inherently resistant to genuine empirical testing, raising serious questions about whether rational choice scholarship can properly be regarded as social science'. Green and Shapiro are political scientists and their conclusion concerning the relevance of the neoclassical model to social science as a whole is as follows: 'Our central argument in this book has been that empirical applications of rational choice theory in political science since the 1960s have been marred by a syndrome of methodological shortcomings' (Green and Shapiro 1994:202). These shortcomings derive from the attempt to develop a 'universal theory of politics and the belief that anything less cannot aspire to be genuine science' (Green and Shapiro 1994:202). What Green and Shapiro claim to have demonstrated is: 'we have shown in this book, however, that to date no empirically credible universal theory has been developed by proponents of rational choice' (Green and Shapiro 1994:202).

So despite Vanberg's novel sociological approach to the issue of economic decision-making by way of theorists such as Holland, the issue of the scientific status of neoclassical economics still remains. Vanberg does not offer any formulation of what 'a more complex behavioural paradigm' might be. He has proposed a more evolutionary principle of rationality as a way of overcoming the problematic of the testable rationality hypothesis.

But the old problem of formulating adequate behavioural functions that would describe, explain and predict the individual choices of agents still remains.Given that the ultimate goal of scientific theory is explanation, the neoclassical theorist is faced with a dilemma: two individuals may effect the same choice but for entirely different reasons. The only other alternative, for explanatory reasons, is to assume that human agents are mindless robots.

Vanberg's theory is interesting in that he seeks to broaden the application of rationality to apply to areas other than neoclassical economics. But his 'evolutionary' approach though useful in helping to understand decision-making both in the market and otherwise, ought not to be considered a scientific theory at all but a heuristic that allows the theorist to interpret intra-cultural rules of rationality once the rules of contextually rational behaviour are known. The problem here though is that the intra-contextual rules of rationality are all learned within a cultural context. And they are all prescriptive rules. Such rules, if broken, deliberately or through cognitive error, often lead to penalties imposed by the market. It is for the above reasons that I am inclined to believe that neoclassical economics is essentially a branch of ethical theory.

In what follows I will seek to first to demonstrate that neoclassical microeconomics founded on the postulate of rationality is a special case of welfare economics which is generally recognised as the normative and evaluative side of neoclassical economics. I will then argue that the optimal way to interpret economic theory is to regard it as a system of ethics in the form of rule utilitarianism.

Neoclassical Theory as a Special Case of Welfare Economics

Welfare economics is generally viewed as the normative side of neoclassical economics given that economic decision-making, in this instance, is determined according to its normative implications. But an analysis of the theoretical structure of welfare economics would inform us that its axiomatic and preference relations structure is identically that of positive neoclassical theory. If that is the case then it logically follows that positive neoclassical theory is itself a normative theory whose social welfare function consists of the neoclassical theorist him/herself and all agents.

First, we should note that the social welfare functions of welfare economics satisfy the properties of completeness, transitivity, and reflexivity which are applicable to weak ranking (R), strong ranking (P), and indifference (I). But the problematic concerning the interpersonal comparisons of utility rejected by many theorists was seen to be resolved by Kenneth Arrow's Possibility Theorem (Arrow 1951). Arrow's Possibility Theorem states that

if interpersonal and dictatorial choices are excluded then no universal social ranking is possible. Arrow's theorem rests on five conditions which are incompatible with any social ranking, R.

It is on the basis of Arrow's theorem that orthodox welfare economics theory derives from the principle of Pareto optimality the following: the equilibrium optimal state of the welfare economy is that at least one agent is better off than in any other state.

What is significant for the present discussion is that neoclassical theory is seen to demonstrate a consistent equivalence between a competitive general equilibrium and Pareto optimality. This amounts to the following: 1) every equilibrium position of the economy is a Pareto optimal state, and 2) any Pareto optimal state of the economy is an equilibrium position of the economy.

The meaning of this is as follows: 1) the axiomatic equivalence of positive neoclassical economics and normative welfare economics means that positive neoclassical economics rests on the same normative foundations as welfare economics. After all, there is the consensus that welfare economics constitutes the normative side of neoclassical economics. We must conclude, therefore, that neoclassical economic theory founded on the postulate of rationality is a special case of normative welfare economic theory.

Neoclassical Economics and Utilitarian Ethics

In this section I want to argue that the most accurate description of neoclassical economic theory in its positive mode, founded as it is on the postulate of rationality, constitutes an aspect of utilitarianism, that is, rule utilitarianism. In the standard literature, it is claimed that although ethical considerations played an important role historically when it was known as political economy, such has not been the case when economics decided to assume scientific status. Thus contemporary theorists speak not of economics possessing ethical content but rather needing a closer relationship with ethics. In this regard, one might consider the works of Sen (1987), Hausman and McPherson (1996) and Groenewegen (1996).

But it should be noted that in the past, economics and ethics were both intertwined, to the extent that economics was seen as a subsection of ethics. As A.W. Coats notes: "Nineteenth century and twentieth century economics was, of course, a direct outgrowth of moral philosophy, and within that framework many authors would move unselfconsciously back and forth between positive (is) and normative (ought) statements without uneasiness and further specification' (Coats 1996:81-82).

The definitive rupture between positive economics and normative economics took place when J.M. Keynes proclaimed that positive economics

as a positive science deserved to establish itself independently as a genuine science (See Michael V. White 1996:104). The same applies to Alfred Marshall. Michael White writes: 'Like Keynes, Marshall wanted to separate economics from any particular philosophical or ethical system' White 1996:106). I want to demonstrate now that neoclassical economic theory, despite attempts to the contrary, is indeed an aspect of utilitarianism, that is, rule utilitarianism.

Before making the case for neoclassical economics as an instance of rule utilitarianism, it would be instructive to demonstrate how modern neoclassical economics was developed from the assumptions of classic utilitarianism. It was Bentham who first formulated the idea that ethical theory should be founded on the twin sensate principles of pain and pleasure. The idea here is that humans are wont to define the natural language concepts of good and bad in terms of pleasure and pain, both psychological and physical. It is for this reason that explanation of the behaviours of humans is more appropriately arrived at by appeal to utilitarianism rather than to deontology. This idea is echoed in Jeremy Bentham's 1879) observation that human conduct is determined principally by the 'two sovereign masters of pleasure and pain'. This was the basis for Bentham's 'felicific calculus' founded on the principle of 'utility'. But what was quite important for Bentham's thesis and a subsequent quantitative economics was that the utility derived from specific acts was measurable in terms of intensity, duration, propinquity, remoteness, and so on. These considerations were captured by the measurable concept of the util, central to the concept of cardinal utility.

Within the context of post-Benthamite economics, it is instructive to note that the original idea of evaluating human decision-making – strictly moral or otherwise – in terms of pleasure or pain, ultimately to be understood as 'satisfaction', became translated into the measurable metric of 'cardinal utility'. The principle here is that satisfaction could be measured and that it was variable over time. This explains the later introduction of concepts such as 'marginal utility' into the mechanics of a developing neoclassical economics.

But the utilitarian paradigm was stymied by the fact that cardinal utility could not be measured because 'satisfaction' could only be determined subjectively. There was no measuring rod available that could measure comparatively the satisfaction that individuals experienced as they made their decisions. This problem also led to the observation that interpersonal comparisons of utility were not possible. One recalls in this connexion J.S. Mill's quip that the 'dissatisfaction' experienced by a Socrates was of greater utilitarian value qualitatively than 'satisfaction' experienced by a – pig. Well, who knows? The upshot of this was that the utilities that agents derived from their decisions were individual and subjective, thereby raising questions

as to whether utilitarianism as an ethical theory could ever be established. If the 'the good' was determined by some felicific calculus which in turn was restricted to non-comparable subjective sensations of pleasure and pain then there would be no firm basis for a general theory of utilitarianism. I discuss this on the grounds that the utilitarian principle, which states that the optimal state of affairs for society is one in which the sum of all possible individual welfare (satisfaction) functions is maximal, is central to modern welfare economics.

But the central point I make in the above discussion is that there is a very evident connexion between neoclassical economics and the theory of ethics known as utilitarianism. In fact, it could be argued that neoclassical economics is a direct product of utilitarianism as a system of ethics.

Rule and Act Utilitarianism

Utilitarianism is defined as the ethical theory founded on the principle that preferable acts are those that increase rather than diminish the satisfaction, welfare or sensate well-being of individuals taken singly or collectively. Utilitarianism has also been defined as an instance of the broader ethical theory known as consequentialism whose definitional principle is that the ethical value of an act is to be determined only by its consequences. One might, in this regard, contrast consequentialist theory with deontological theory which argues that the moral worth of a decision or act is determined purely by its intrinsic rightness or wrongness. What is interesting though is that in the realm of public affairs human agents prefer to evaluate the moral worth of a decision or act according to some version of utilitarian consequentialism. The determinant invariably reduces to whether the decision or act enhances agent welfare or not. It is at this point that the connection between utilitarianism and neoclassical economics becomes evident. The question then is as follows: when theorists of neoclassical economics formulate theories according to the fundamental postulate of rationality, which is instantiated as the maximization of expected utility, to what end or consequences should the decision-making neoclassical agent maximize expected utility? The obvious answer is that the maximization of expected utility is expected to increase the welfare of the decision-making agent. In this regard, the neoclassical theorist is in reality formulating ethical dictates according to consequential utilitarianism.

Thus the prescriptive principle of neoclassical theory, according to the postulate of rationality, could be viewed as an instance of rule utilitarianism. Rule utilitarianism is defined as a kind of regulative principle of utilitarian conduct that states that the agent should make choices that enhance his or

her own welfare. Apply this ethical principle to all agents as is prescribed by neoclassical theory and neoclassical theory logically entails welfare economics, the normative branch of neoclassical economics.

But there are cases where the agent in actual circumstances seeks to maximize utility according to the formal principle of rationality but is constrained because of cognitive limitations with regard to information, cogitating skills and contingent events. Under such circumstances the agent would be required to act according to minimax rules. One recalls in this instance Herbert Simon's theory of bounded rationality according to which agents must act to maximize expected utility in specific situations constrained by available resources and knowledge.

I have argued above that neoclassical economics on account of its reliance on the principle of utility is fundamentally an aspect of the theory of ethics known as utilitarianism. According to ethical theory 'the good' is what is usually defined as an act or thing that is desirable or preferred either in terms of intrinsic or deontological worth or in terms of its sensate consequences. In this regard, neoclassical theory is not more than a formal instance of rule utilitarianism. In fact, the rule utilitarianism of neoclassical microeconomics could best be categorised as an example of 'preference utilitarianism'. Thus the good consequences of any choice would be classified as 'preference satisfaction'. It follows that when the neoclassical agent is required to be consistent in his or her choices so as to maximize expected utility, the theorist is merely formulating an ethical theory founded on the idea of preference utilitarianism.

Excursions into Fantasy: Behavioural Economics and Neuroeconomics

Given the inadequacies of neoclassical theory in terms of its capacity as science to explain and predict in conjunction with its reliance on the problematic postulate of rationality, there have been some new theoretical efforts to deal with its problems. The most influential of these new approaches are behavioural economics and its correlate neuroeconomics. It will be shown that both paradigms are incapable of solving the problematic of neoclassical economics.

Behavioural economics begins with the assumption that economic agents do not always conform to the postulate of rationality according to its optimisation rules. The solution for the behavioural economist is to bring psychology back into economics. According to Colin Camerer: 'In fact, behavioural economics represents a reunification of psychology and economics, rather than a brand new synthesis, because early thinking about economics was shot through with psychological insight' (Camerer 1999:1057). This reunification has its foundations in the earlier research in psychology carried out conjointly by Daniel Kahneman and Amos Tversky (1979.

Noteworthy contributors to the behavioural paradigm include earlier theorists in game theory such as von Neumann and Morgenstern (1944).More recently, the research efforts of Richard Thaler (1992) and Dan Ariely (2008) are to be noted. As stated above, the impetus behind behavioural economics is the fact that individuals often behave differently from what is prescribed by orthodox neoclassical theory.

Behavioural economics chooses to remedy that problem with an emphasis on laboratory-bound empirical work. It has been variously observed that human behaviour is multifaceted and comes in a multiplicity of dimensions. There are risk takers, risk averters, present bias agents, future bias agents, individuals who deliberately choose not to maximise their utilities in empirical terms, etc. But despite this effort by theorists such as Ariely (2008), behavioural economics is ultimately compromised by its insistence that agents make mistakes when they do not conform to the optimising mechanism as suggested by the postulate of rationality. The fact is that the construction of scientific theory is based on the assumption that nature behaves predictably. This is what allows the formulation of scientific laws and the construction of theories that determine prediction and explanation, crucial for scientific understanding.

In the case of human beings, however, driven as they are by consciously subjective thought, there is little basis to establish universal laws of choice. Were human behaviour driven by instinct, things would be a bit more tractable. The point is that as long as human choice is consciously subjective and at variance and not fully predictable then new approaches as in the case of behavioural economics are bound to be theoretically suspect. Matters are compounded by the fact that it seems impossible to dispense with some postulate of rationality if explanatory theories are going to be constructed. After all, humans make conscious choices founded on consciously engendered reasons and motives. It would be a different matter entirely if human choice did not have that mysterious mental correlate that in turn has its correlate in neuronic activity. The upshot of all this is that given the great complexity and range of human thought in terms of reasons for choices and the choices themselves, the behavioural theorist is confronted with an enormous problem given that any conception or postulate of rationality is just as good as any other. So the only kind of theories that the behavioural economist could formulate would be his or her preferred theories, founded on his or her notions of rationality.

Such notions of rationality employed by the theorist would often be more cognitively robust than those employed by live agents themselves. But it would then be the epistemological responsibility of the theorist to explain the psychological basis for the behavioural phenomena of agent cogitation on

decisions that include degrees of riskiness (the "prospect theory" of Kahneman and Tversky, 1979) and "framing" (agents prefer the same results expressed positively rather than negatively according to test results of Kahneman and Tversky, 1979). It is on this comparative basis that behavioural economics is able to play off the standard rationality paradigm of neoclassical economics with deviant models founded on empirical behaviour. Thus all we can say in all of this is that in behavioural economics the orthodox rationality-based models still stand and they justify themselves in terms of their being more cognitively robust than the deviant empirical models founded on actual agent decision-making. Similar considerations apply to the research done on animal behaviour as a way of showing that animals do conform to the orthodox postulate of rationality as if to confirm implicitly that humans and animals are hard-wired with the orthodox rationality postulate

But this is not the issue. After all, a robot can be programmed to make rationally optimal moves in any kind of game scenario, whether chess, for example, or otherwise. The issue has to do with explaining the myriad kinds of decisions agents consciously make as they pursue goals by whatever chosen means. But when such decisions are consciously made, explanations require an appeal to particular models of agent rationality. In other words 'rationality' necessarily applies to humans for explanatory purposes but not to animals or robots. Behavioural economics is useful in that it widens the empirical scope of neoclassical economics but that just complicates matters more. Neoclassical economics is thereby committed not just to one model of rationality but to a multiplicity of others.

Given that normal human decision-making is usually effected consciously, empirically-minded behavioural economics deems it necessary to seek ultimate explanation of agent behaviour in terms of the neuronic basis of decision-making. This is the basis for the branch of behavioural economics known as neuroeconomics. Research has been done to match behavioural choices according to positive or negative agent appraisals by machine inspection of brain activity (Sanfey et al 2003; Camerer et al 2005**).** But all this is overly optimistic thinking as researchers in neuroscience and philosophy will note. There seems to be that seemingly impassable gap between subjective mental states and their neuronsic correlates. Behavioural economics hardly has new insights into this matter. The conclusion here is that neoclassical economics has been pursuing a pipe dream in its quest for scientific authenticity and respectability. Based on the analysis above, it is evident that neoclassical economics is not much more than a normative guide to optimal decision-making. But a guide that few agents are capable of conforming to either voluntarily or otherwise.

Neoclassical Economics as Ideology

We have seen that modern economics has been persistent in its attempt to be classified as a positive science, a kind of engineering-like description of human decision-making. This is a point aptly made by Sen (1987:4). It is this engineering approach that has characterised all aspects of neoclassical theory for the last several decades. Even the normative side of welfare economics is assumed by many theorists to be on the same value-free plane as positive economics. This is guaranteed by the equilibrium compatibility between general equilibrium theory and the Paretian welfare principle. In this regard, neoclassical economics is concerned mainly with questions of efficiency and rarely those of equity. And even in those cases where equity considerations enter the picture, such is compromised by the constraints of the Pareto principle. This means that a Paretian welfare economics offers little guidance in situations of extreme disparities in wealth.

The market is the locus of operation for all of neoclassical economics. It is the habitat of rational economic man whose decisions are meaningful only under considerations of efficiency. Thus decisions that seem to affront human well-being and welfare are preferable as long as they yield efficiency results. The trained neoclassical economist is to be seen therefore as the kind of physician who is tied to profit-seeking insurance companies and who seeks first not to offer his patient optimal care but to cut costs – often at the expense of life and limb.

Evidently, neoclassical economics has taken flight from the real world to install itself in a universe of humanoid automatons programmed according to a prescribed postulate of rationality. In this fictitious universe the theoreticians are free to concoct as many models as they fancifully choose. The truth is that we live in the world of real humans whose decision-making abilities are subject to their limitations in knowledge and cognitive dispositions. But the theoretical and applied practitioners in the field of economics all know that the mantra of 'efficiency' rules in both the artificial and the real world. Thus the real world of humans is constantly being assailed with the slogans of 'cost cutting', 'down sizing', 'maximization of profits', and so on. If 'efficiency' requires massive unemployment then so be it. The counterargument usually employed by the theorist is that the economy is best left to operate according to the laws of the market and the rational expectations of agents. But I have shown above that neoclassical economic theory is intrinsically value-laden and an instance of preference utilitarianism.

An ideology is a structured set of beliefs that is in reality value-laden but presents itself as an objective set of ideas and facts about how the world is structured. So it is that the whole structure of neoclassical economics

represents an ideology. Neoclassical economics is indeed the ideology of the age as argued for by Yanis Varoufakis (1996) in his paper 'O Tempora, O Mores! Economics as the Ethos of Our Times'. Successful ideologies become a pervasive aspect of society despite the fact that they may affect different persons differentially. The foundational ideology of neoclassical economics has been so successful that even those negatively affected by its ethos support it. Its ethos of individual maximization of utility and gain produces unemployment, poverty, exploitation, the fetish of the cash nexus, huge disparities in wealth, and the evaluation of individuals according to their ownership of material objects.

In more sociological terms neoclassical economics serves as the theoretical substructure of the ideological system that promotes neo-liberal market economics in today's world. The structure of the world it promotes is premised on the theory that the market system is founded on the objective laws and principles formulated by neoclassical economics. Individual agency is objective normalcy, hence the sloganeering dictate that the privatization of capital is preferable to government-based spending on the social and welfare needs of society as a whole. In brief, the generic neoclassical economics sees nothing wrong with societies with large Gini coefficient disparities.

Shifting the Paradigm: From Economics to Anthropology

In their attempts to establish economics as an empirical science theorists of economics were required to formulate theories that were both predictive and explanatory. But this goal was unachievable for two main reasons: 1) human behaviour is unpredictable and 2) the sources of human behaviour – necessary for explanatory purposes – are non-empirical mental states. The heuristic solution was to formulate a model founded on the theoretical template of a rational economic man who would be the basis for all of formal and empirical economic theory. But as Herbert Simon pointed out many decades ago, that model proved itself to be both empirically and theoretically unworkable. Simon's replacement model, founded on the principle of bounded rationality itself, proved to be unviable, hence the continuing reliance on the formal analytic model of neoclassical economics. In this regard, 'economic models are viewed as being analogous to models in mathematical logic' (Rubenstein 1998:191).

There are problems with this approach given that the understanding of the empirical decisions that humans make in the context of economics is what is required of any avowedly empirical discipline. One solution to this problem is to apply the same methodology that scientific researchers employ when they study the behaviour of animals and humans from a purely empirical standpoint.

Ethologists inform us on the behaviours of animals such as mammals that engage in exactly the same kind of behaviours that humans engage in: employing the behavioral mechanisms appropriate for survival within particular ecological environments. Thus one would not be in error to state that ethology offers explanations and predictions concerning the economic life of, say, elephants in some specific ecological environment. Given the fact that the choices that mammals effect are much more instinct-driven than those of humans, the ethologist can offer explanations that are sufficiently cognitively satisfying without recourse to the theoretical machinery of neoclassical economics.

So it is too for the anthropologist who studies the economic decisions of humans in environments that do fall under the sway of neoclassical economics. Empirically descriptive models are all that the anthropologist needs to explain and even predict how economic transactions eventuate in some society. The anthropologist might appeal to concepts such as kinship, ritual, reciprocal friendships, all components of culturally embedded value systems to explain phenomena such as gift giving, barter, conditions of production, and so on – all within a context of decision-making, choice and scarcity. But this is exactly what we have in modern market economies: economic decisions are made within cultural contexts that set the rules of the game. Consider how a non-human observer would describe and explain the behaviour of elephants and humans. It is doubtful whether qualitatively different models would be appealed to in these cases. There would be no need to appeal to the models of neoclassical economics in this instance. No doubt, the reason why the replacing of neoclassical economics with anthropology would not be an attractive alternative is merely human narcissism and self-regarding introspection.

The question concerning the relationship between economics and anthropology has already been explored under the rubric of economic anthropology. Consider, for example, the substantivism of Karl Polanyi that viewed formal neoclassical theory as erroneously applicable to what are regarded as non-market economies. Polanyi argued that it was an error to evaluate what he called ‘archaic’ or ‘primitive’ economies with the same tools that were used for the market economies of modern industrialized states. The economic life of such societies was dominated by reciprocal gift-giving among kin and others for the main purpose of maintaining status and individual dignity. Such societies had no notion of the individualist utility maximising economic man of neoclassical economics lore (Polanyi 1944).

Polanyi’s critique was directed against the idea that the lives of humans in whatever cultural setting could be subjected to the analytical tools of neoclassical economics. His countervailing thesis was that in those societies

where economic life was not dominated by the transactions of the market, the application of the explanatory paradigm of neoclassical economics was not appropriate. Polanyi's argument in brief rests on the following assumption: ' instead of the economic system being embedded in social relationships, these relationships were now embedded in the economic system' (Polanyi 1968: 70). In other words, market economics with its subordination of society to the alternative twin dictates of starvation or profits has subverted traditional social structures in which human social life was ultimately based on non-economic factors such as kinship and religion. In all these societies, according to Polanyi, the guiding social ethos was reciprocity and redistribution. For Polanyi, the theories of market economics should properly be restricted to post-Ricardian industrialised society. In other words, a quantified version of utilitarianism with the ascribed name of neoclassical economics was deemed sufficient to account for the behaviour of humans within society. The pretensions here were that this new discipline was sufficient to analyse human behaviour scientifically. But based on the arguments in the discussion made above, this approach has been shown to be problematic.

But if the descriptions and explanations of the economic life of the Trobriand Islanders offered by the economic anthropology of a Malinowski is sufficiently cognitively satisfying then why not the same for the economic life of individuals within market economies? Polanyi's argument would be that the lives of humans within industrial society are directed strictly by the dictates of the market mechanism. In this regard, economic behaviour is not embedded in the prevailing culture, rather it is culture that has been suborned by values of the market subculture. What are these values? They constitute an assumed faith in business and property contracts, a strongly held belief in the sanctity of private property, a firm belief that risk should be rewarded, that humans are ultimately responsible for themselves principally without regard for the general welfare of the social collective, that human empathy extends only to the closest kin, and that humans are naturally hard-wired to seek out gain in their impersonal transactions with each other. But all these beliefs and their accompanying behaviours could be just as easily understood as those of individuals whose anthropologies are those of non-market economies, by appeal to the tools of economic anthropology.

Robinson Crusoe and the Human Challenge

Humans are not driven by instinct as is the case of other mammals. Culture decides the rules of conduct in practically all spheres of decision-making. So the kinds of society that humans choose to establish reduce on the contingencies of culture choice, *pace* the sociobiologists. It is the case that

the economic behaviour of humans in groups is determined by culture and its attendant ethics.

To illustrate the point being made consider the case of the historical Robinson Crusoe – a metaphor for colonialism and the expansion of capitalism – alone on his island. What kind of economic system would he practice? Crusoe would be self-governing and owner of his own capital, that is, his own tools of production. He would be productive as he saw fit and would share his production with himself only – as hermits have been known to do. But the question is this: what kind of theories would some hypothetical researcher construct to account for the behaviour and activities of Crusoe? Would this hypothetical researcher apply the techniques of the neoclassical economist or appeal to the toolkit of the anthropologist. Of course, the orthodox neoclassical economist would create some sort of hypothetical Crusoe who would supposedly conform to the behavioural rules prescribed by the theorist himself. It is obvious that more would be learned about Crusoe's decision-making by appeal to the techniques of anthropology than to those of the neoclassical economist. The reason is that the anthropologist as scientist would seek first to describe the behaviour of Crusoe without appeal to some concept of rationality which might just be culturally idiosyncratic to Crusoe himself. The anthropologist's description and explanatory analysis would certainly fall within the context of what the anthropology profession describes as cultural relativism. But the neoclassical economist cannot afford to adopt this methodology given that the neoclassical paradigm is firmly wedded to the positivist school of thought which has traditionally argued for a 'unity of science approach' for all objects of empirical inquiry. This would bring us again to the well-worn issue concerning the appropriate methodology for the human or social sciences.

The goal of this paper all along has been to examine whether theorists of neoclassical economics have been successful in establishing a genuine science of economics given the efforts of its most prominent methodologists. I have argued that neoclassical economics is essentially a normative system founded on a generically neoclassical postulate of rationality. Whether Crusoe decides to adopt the choice paths prescribed by the neoclassical theorist can be best described by the anthropologist as an economist. The same approach would be at work when the Crusoe story becomes more interesting with the arrival of Friday. We venture here, of course, into the area of welfare economics where the theorist openly admits that in this instance value judgments hold sway.

So what are possibilities? Crusoe could capture Friday and put him to work as a serf or a semi-free bondsman who must turn over the major portion of the produce from the work imposed on him. Crusoe's argument

in support of the economic structure set up would be that he ought to be rewarded for the capital that he provided for Friday and the risks incurred by investing in Friday. That is the neoclassical-neoliberal argument. But there are major risks involved for Crusoe when Friday quickly realises that he is producing much more than he is consuming. He is not free and he knows that Crusoe's economic survival depends on him. The Hegelian dialectic between master and bondsman has been activated. Couple that necessary conflict with the capitalist crisis of overproduction where Crusoe hoards the surpluses produced by Friday. Since Crusoe cannot consume all the surpluses and has restricted Friday a bare minimum subsistence quota, Friday must cease work and production. This is the dynamic of neoclassical economics as capitalism.

Or Crusoe could choose to share his capital with Friday with both individuals engaging in production – hunting, fishing, planting, building, and so forth – and both sharing the output. But before embarking on such, both would have worked out contractually the duties and obligations that would determine how they would work together. Of course, what all this reduces to are questions concerning issues of welfare economics in the context of the questions raised by Pigou, Pareto and Arrow. Methodologically speaking, these are the same questions that the neoclassical theorist must ask.The plain truth is that all this would not be fully understood outside of the context of anthropological analysis. Only anthropological analysis would inform that neoclassical economic theory and its practice as capitalism should be understood as the particular socio-anthropology of the West.

Conclusion

The purpose of this paper is to demonstrate that despite its forays into revealed preference theory and rationality, neoclassical economic theory remains inescapably value-laden and as an instance of preference utilitarianism. The fact that neoclassical theory is strongly held to represent an objective and scientific economics would mean that its intent is ideological. The question then is whose interests does neoclassical economics serve? The question is an important one in that humans are the only living species that are equipped with the cognitive skills to radically transform nature to satisfy survival needs. Yet we live in a world in which the optimal human decision-making mechanism that could maximize the vast multiplicities of human cognitive skills to attain the ends of maximum human welfare in its myriad dimensions, has been usurped by neoclassical economics whose creative destruction is embodied by the fabled four horsemen of the Apocalypse. The point is that the whole human condition is in dire need of rethinking and it should not be left to the purveyors of neoclassical economics, an ideologically driven discipline that

has shaped the central ethos of modern times. And what is that ethos but the culture of capitalism, a product of the West. And although the most influential economist of the twentieth century, John Maynard Keynes, saw fit to rescue capitalism from its self-destructive activities that resulted in the economic crash of 1929, he still had little faith in it as an economic system. Consider the following: 'The outstanding faults of the economic society in which we live are its failure to provide for full employment and its arbitrary and inequitable distribution of wealth and income' (Keynes 1936:372). Those serious faults of capitalism are still with us and causing even more havoc.

The ploy of course is this: if neoclassical economics could be proven to a be a science by way of RPT, then it would be argued that the victims of capitalism and its instantiation as neoliberal economics would just have to live with their victim status.

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