Innovation & market power: A review of the theories of Thorstein Veblen and J. A. Schumpeter

by

D. Troy Cochrane

(3847984)

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Supervisor: Professor Michel Chossudovsky

ECO 7997

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The large business man controls the exigencies of life under which the community lives. Hence, upon him and his fortunes centers the abiding interest of civilized mankind. - Thorstein Veblen, 1904

What dominates the picture of capitalistic life ... is innovation. - J. A. Schumpeter, 1939

Introduction.

One of the important outcomes of the neo-classical model of market economies is the proof of a 'general equilibrium' in which "the effective demand for each commodity equal its effective offer" (Walras, 1874/1954, p. 172). By the first theorem of welfare economics, this result is considered to be a Pareto optimal outcome, meaning no individual can be made better off without any other individual being made worse off (Varian, 1992, p. 345). The result is a static one, with dynamics describing how the system moves from one equilibrium state to another in response to an external change of parameter (Samuelson, 1947, p. 257-258)[1]. Among the standard assumptions that are necessary for this equilibrium outcome of the model is that of 'pure competition.' This condition guarantees that "each product have only one price in the market ... the price at which the quantity supplied equals the quantity demanded, and that the selling price of the products be equal to the cost of the services employed in making them" (Walras, 1874/1954, p. 255).

The general form of 'pure' competition that is theorised is 'perfect' competition. The assumption of perfect competition asserts that atomistic, price-taking firms each provide such a small portion of the undifferentiated supply that none are able to exert influence over the price. However, even in the absence of perfect competition and with market dominance by a few producers, neo-classical theory argues that the assumption of free entry will produce the same result.

In this way, real-world competition is asserted to produce the same result as that in the model of pure competition.

While the above description ignores the fact that there have been numerous extensions and departures from the standard model, this simplified form of general equilibrium emerging from a perfectly competitive market system remains the departure point for much of the more advanced work of the neo-classical analysis[2]. As well, several schools of thought other than the neo-classical have emerged to offer alternative theories of market economies. However, neo-classical theory "underlies every theoretical subfield of specialization and every theoretical, practical, and policy-oriented conclusion at which they arrive" (Hunt, 2002, p. 382).

The basic microeconomic model of the neo-classical tradition has largely retained the substance given to it more than 100 years ago in the works of such authors as Léon Walras (1874/1954), Stanley Jevons (1871/1956) and Alfred Marshall (1890/1961). The form is largely that found in Paul Samuelson's *Foundations of Economic Analysis* (1947), which was written almost 60 years ago. The paradigm is certainly not without its share of criticism. Among the problems noted by these critiques is the model's exclusion of market power and internally disequilibrating forces. These problems are related to the mainstream discipline's restriction of its analysis to certain aspects of society, while excluding other aspects. Among those who felt this delineation was problematic were iconoclastic economists Thorstein Veblen and J. A. Schumpeter[3]. They both included the existence of market power and disequilibrium in their analyses.

The purpose of this research paper is to analyse the relationship between innovation and market power as forces of disequilibrium that result in continual and cumulative change within the economy. Particular elements of the theories of Veblen and Schumpeter will be used to perform this analysis. Their ideas will be contrasted with certain aspects of the neo-classical model. As well,

consideration will be given to certain aspects of the evolutionary economics school of thought, which has been influenced by both Veblen and Schumpeter.

Contrary to the basic neo-classical model, innovation should be understood as emerging from within the economic system. As an on-going process, innovation ensures that the economy will always be in disequilibrium. As well, the dominance of 'Big Business' and the actions it utilizes to serve its ends means that the price mechanism will not function as demonstrated in the model of pure competition. This paper intends to demonstrate that firms with market power utilize innovation in a competitive process as a means to entrench and expand their power.

A central aspect of Veblen's thought was the distinction between business and industry (1904; 1919b, Ch. 10; 1923). He identified business as a matter of pecuniary gain and industry a matter of production. He asserted that business is the controlling force and it uses industry as a means to accumulate wealth. Schumpeter emphasized the process of innovation as the means of competition utilized by profit seeking firms (1934; 1939, Ch. 3-4; 1950, Ch. 6-8). Both theorists decisively rejected the neo-classical model's focus on production as the only activity available to the firm because it restricts the competitive behaviour of firms to price competition.

Neither Veblen nor Schumpeter were model builders. Both relied more heavily upon observation and analysis. This is part of the reason why their ideas are absent from much of the neo-classical discourse. Their critiques, although directed toward the neo-classical models, were made with historical and institutional points-of-view. This set them apart from other critics of the neo-classical paradigm, such as Piero Sraffa (1952; 1960) and Joan Robinson (1953; 1969) who, although concerned with the perceived lack of realism of neo-classical model, generally focused their critiques on the modelling. Their criticisms tended to be more formal and systematic.

Despite the vast differences between the two authors in style and outlook, Veblen and

Schumpeter considered remarkably similar phenomena. Both concentrated on explaining the complex and anomalous elements of capitalist economies that they perceived to be important aspects for understanding the economic process. They believed the (neo-)classical model failed to adequately incorporate or explain these complexities.

Both saw the dynamic change within firms and industries and the dominance of large-scale firms as being important aspects of capitalist economies. As well, both considered the importance of habit in generating 'path dependence' in the economy and observed that the emergence of endogenous change alters the course of the economy and society. However, the outcomes of their analyses were quite different. Where Schumpeter saw the capitalist-entrepreneur driving the process of 'Creative Destruction,' that led to the 'evolution' of economies (1939, Ch. 3; 1950, Ch. 7), Veblen saw the 'absentee owner' restricting output in order to keep prices high and maintain their positions of power against the force of social change (1904; 1919a, Ch. 4; 1921, Ch. 1; 1923).

Veblen believed the 'pecuniary interests' of the 'absentee owners' of 'Big Business' could best be served by restricting production. As such, he saw the interests of business as fundamentally divorced from the interests of the community. Schumpeter, on the other hand, saw the profits of business as a spur to innovation. He considered the on-going process of innovation by competitive firms to be a progressive, driving force of the economy that served the interests of consumers.

Their perspectives closely reflect those of many critics and supporters of the capitalist system, both within academia and outside of its halls. Critics claim that large-scale, transnational corporations, in their pursuit of profits and wealth, drive imperialistic foreign policy (Magdoff, 1969), encourage excessive consumption (Galbraith, 1969; Hahnel & Albert, 1990), degrade the environment (Daly & Cobb, 1989) and just generally exert power over society (Chomsky, 1999; Bakan, 2004). Conversely, supporters such as Milton Friedman (1962), Francis Fukuyama (1992),

Hernando de Soto (2000) and Jagdish Bhagwati (2004) point to the high material standard of living and relative political freedom in developed capitalist countries, as well as high productivity and the wide-spread use of advanced technology. They claim that only under a capitalist system could these advances have been realized to the degree that they have.

This paper's analysis will attempt to synthesize the seemingly conflicting theories and conclusions of the two authors. The argument is that, as Schumpeter believed, profits and accumulation are spurs to innovation. This innovation is an important means of competition among dominant and sub-dominant firms, hence the term 'Schumpeterian competition.' However, in line with Veblen's analysis, the innovations that are implemented are chosen by business in the service of pecuniary, not productive, ends. This means the economic system is not deterministically evolving in a direction that is, in general, increasing the welfare of society.

Scholars as disparate as Milton Friedman and Noam Chomsky agree that the purpose of the corporation – the primary business form of modern capitalist economies – is not to serve the social interest, but to serve the interest of its shareholders. A common rebuke of those who are critical of this aspect of business is to invoke classical economist Adam Smith and his argument that "every individual exerting himself to find the most advantageous employment for whatever capital he can command ... necessarily leads him to prefer that employment which is most advantageous to the society" (Smith, 1776/ 2000, p. 482). While the economics discipline has, in many ways, advanced beyond Smith, this argument remains a part of the discipline's methodological foundations. However, the formal argument depends upon the assumption of pure competition among atomistic producers[4] or at least, producers constrained by decreasing returns to scale and free entry.

Real world economies are not dominated by such producers or such forces of competition. Rather, they are dominated by large-scale firms with oligopolistic power. Fernand Braudel (1982)

noted that "the laws of the market no longer apply to huge firms." As such, he characterised large-scale business as "the anti-market." These are the business enterprises whose power allows them much more freedom to act than simply production. They are not restricted to price-taking behaviour. In fact, their influence extends beyond the basic activities generally reserved as forming the economy – production, exchange and consumption. Braudel called this realm of unconstrained firms "the real home of capitalism" (p. 229-230)[5]. Once we remove the assumption of pure competition, we must reconsider the equivalence of self-interested corporate pursuit with the social interest.

This essay will first examine Veblen's analysis of 'Big Business,' as well as consider the neo-classical model's treatment of market power and the firm. This will be followed by an examination of Schumpeter's theories of innovation and a consideration of the neo-classical model's treatment of what J. B. Clark (1908, Ch. 3) and Eugen von Böhm-Bawerk (1891, Book 4, Ch. 7) called 'disturbance,' meaning disruption of equilibrium. This will be followed by a brief overview of the evolutionary school of economic thought, concentrating on the influence of Veblen and Schumpeter. Finally, this analysis will attempt to incorporate Veblen's conception of power with Schumpeter's theories of innovation in order to offer new means of understanding the behaviour of 'Big Business' and its role in generating economic change. In this final section, the pivotal argument is made that the businessman, in pursuit of accumulation, uses innovations as a means to power, which serves to transform the economic structure.

In its conceptualization of market behaviour, mainstream economic theory focuses on material consumption as the desired outcome of economic activity. However, for the small minority that controls the largest business enterprises, their consumptive needs and desires are long past served. Wealth appears to be an end sought in and of itself. It represents an ownership claim on property that is a measure of success and a means to exercise power. Businesses compete in an

effort to redistribute wealth in their favour (Nitzan & Bicher, 2002, Ch. 2).

Redistribution increases the ownership claim of those on the favourable side of this on-going process. As ownership is what makes possible the exercise of market power, accumulation becomes both the means and the ends. Because the owners of capital judge their success relative to the competitors, and not against some external measure, this process of redistribution has been called "differential accumulation" (Nitzan, 1998; Nitzan & Bichler, 2000; Nitzan & Bichler, 2002). Firms compete for gain relative to the other members of their industry, in particular, and the economy, in general. If the capitalised value of a business' assets increases five per cent, while the market as a whole has risen 10 per cent, the owner of that business has still lost ground relative to the its competitors. As Schumpeter (1934) noted: "Pecuniary gain is indeed a very accurate expression of success, especially of *relative* success" (p. 94).

Contrary to neo-classical theory in which producers solely engage in price competition, "the role of competition seems better characterized in the Schumpeterian terms of competitive advantage gained through innovation" (Nelson & Winter, 1982, p. 203). The innovation process plays a central role in efforts to differentially accumulate. Innovation is also considered the source of variation that is part of making the economy an evolutionary system. This is why Schumpeter is considered an important early thinker in the evolutionary economics school of thought.

While Veblen is also an important early figure for evolutionary economists, it is more for his critique of the neo-classical focus on equilibrium, his emphasis on cumulative causation – the idea that each change in a system necessarily creates subsequent changes, meaning the system will never achieve equilibrium – and his insights on habit and institutions, than for his work on market power. However, if we recognize the control that business has over industrial production and that its interests are pecuniary, rather than productive, then we can conceptualize how innovations are

implemented for accumulative purposes. A synthesis of Schumpeter on innovation and Veblen on market power will serve as the means of understanding the exercise of power in pursuit of accumulative ends and its influence upon economic change as an evolutionary process.

Veblen, business, industry and market power.

Thorstein Veblen was an unorthodox economist whose work is rarely considered within the mainstream of economic theory. In his day, although alienated from academia, he was well respected for his unique and incisive analysis. Among his admirers was Harvard professor, and editor of the *Quarterly Journal of Economics*, F. W. Taussig. Several of Veblen's writings appeared in the *Quarterly Journal*, which was the preeminent economics journal of its day. He was even once invited to be president of the prestigious American Economic Association, "the highest honor that can be accorded to an economist" (Dowd, 1964, p. 122n), although he turned down the position. A student of early neo-classicist John Bates Clark[6], Veblen turned against the neo-classical school of thought that was just then emerging[7].

A standard neo-classical description of economics is as "the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses" (Robbins, 1935, p. 16). Veblen believed this focus by neo-classical economics, which he referred to as "marginal-utility economics," made assumptions that eliminated from their models those aspects of the economy that he considered to be the most important, "technological change, the nature and function of economic and legal institutions, and the process of social change resulting from the interaction of these" (Dowd, 1964, p. 60). One of the features of modern economic institutions that Veblen stressed was the distinction between business and industry. The former, he asserted, concerns itself with pecuniary gain, the latter with production.

In making the distinction, Veblen stressed that through its ownership business exercises control over industry. That control, he explained, is used for the purpose of making pecuniary gain, not for the purpose of supplying goods. Production is not the purpose of business but the mechanism by which profits are made. As business concerns dominate and "production must wait

on earnings" (1923, p. 220) production cannot be understood in terms of the usefulness of its output. Veblen observed that the purpose of production "is the vendibility of the output, its convertibility into money values, not its serviceability for the needs of mankind" (1904, p. 30). He declared that the motive of the businessman is the accumulation of wealth. He saw this interest becoming acute after the proliferation of machine production, which allowed for a drastically increased scale of production. It was this proliferation that led to the separation of the owner, the manager and the engineer.

Veblen carefully described the process by which the control of industry moved beyond the innovating engineer into the hands of the businessman: (1) machine technology grew more complex – giving rise to the engineer, (2) the scale of industrial processes grew and required devotion of attention to the technical side, (3) the business concern of ownership grew and took on a financial aspect leading to the rise of the corporation, (4) productive capacity grew and supply capability concerns diminished and questions of falling prices grew, (5) "production overtook the market," (6) business interest moved to financial concerns and focused on the negotiation and maintenance of available credit, (7) capitalisation of credit with fixed charges precluded lowering prices (1923, p. 110-111). This process, particularly the requirement for engineering and financial expertise, required – and allowed – the rise of the three positions. The financial matter rose in concern and importance and industry became subordinated to business. ""Business enterprise," Veblen wrote, "ceased progressively to be compatible with free-swing industrial enterprise" (p. 111).

The concentration on the role and activities of businesses that possess market power put Veblen in conflict with the neo-classical model of equilibrium between supply and demand. Veblen critiqued the perspective of the dominant economic paradigm, which he believed treated the accumulative efforts of business as "incidental features of the process of social production and

consumption." He, on the other hand, felt they must be recognized as "the controlling factor about which the modern economic process turns" (1919b, p. 286). It was for this reason that Veblen believed economic theory must be "primarily a theory of business traffic, with its motives, aims, methods, and effects" (1904, p. 8).

The Robbins' description of the role of economic theory (1935, p. 16) excludes consideration of the source of human desire for particular ends and the feedback that exists between the utilization of 'scarce means' and the demanded ends. The desired end will certainly influence the purpose to which the means are put. However, the reverse will also be true, as the chosen utilizations will influence the ends that are desired.

The description also excludes consideration for the decision-making process that determines to which use the 'scarce means' are put, among the alternatives. This is because demand is assumed to be a determined function of preferences that are exogenous to the system. Producers are then assumed to simply serve this demand. Where power is considered, it is the market power of a pure monopoly that only exerts its will solely through the restriction of production. All other power relationships and means of exerting power are placed outside the consideration of 'pure economics.'

Even if we accept the neo-classical restriction of business action to production and production alone, we can see how a position of power works to serve business interests. To utilize production from a position of power is to restrict production. The Marshallian treatment of pure monopoly – which neo-classical analysis considers in its partial equilibrium models – finds that the monopolist facing a downward sloping demand curve, a downward sloping marginal revenue curve that is twice as steep, and producing where marginal revenue equals marginal cost. This level of production is less than would be produced in a purely competitive market. Veblen – who perceived most of the American economy as being composed of less-than-perfectly competitive industries –

described this restriction of output as "sabotage" (1923, p.66), although he saw it as much less systematic than in the Marhallian conception. As well, Veblen recognized the impact of the monopoly's actions upon society and the interest of the businessman in utilizing this impact to his own advantage.

Pure monopoly is not the only form of sectoral organization that can provide power to a business unit. Other forms of market structure besides pure competition or monopoly include: the production of differentiated products, local monopoly, large entry and exit costs, and political protection through tariffs or intellectual property rights. These were some of the forms that Chamberlin (1962) meant with the term 'monopolistic competition.' In the presence of any of these less than purely competitive sectoral forms, businesses will be able to garner additional profit, even if their only means of action is considered to be production.

Among the expressions of market power that Veblen observed were the efforts of business to differentiate its products through advertising. He noted that there are several types of monopoly. However, he focused on a type he vaguely described as of a "less definite character resting on custom and prestige (good-will)" (1904, p. 32). He believed this 'good will' allows the business to sell its goods at a greater price. This, he commented is "the final term of the sequence" of industry. As such, Veblen noted that "there are many lines of industry in which the cost of marketing the goods equals the cost of making and transporting them" (1919b, p. 298)[8].

Veblen asserted that advertising was a mechanism of business competition, the purpose of which is "the diversion of purchase and sale into some particular channel, commonly involving a diversion from other channels" (1919b, p. 294). For advertising to work, business must be able to influence demand. This influence it wields to create demand for its products. As Veblen famously quipped: "Invention is the mother of necessity" (1923, p. 63n).

He acknowledged that the public must have some use and demand for the product of industry. However, need only affects production indirectly. Its effect is through the pecuniary benefits that will accrue from the servicing of that need. This is what dictates production. Vendibility, not serviceability is what business seeks from production. He characterised the activities of business as those of salesmanship, while industry is, in his opinion, a matter of workmanship. To business, the primary importance is not the purpose to which a good will be put, but the ability to sell that good. Business control of industry for the purpose of pecuniary gain has separated "the interests of those men who exercise the discretion from the interests of the community" (1904, p. 20). Veblen cited the businessman's interest in war as a source of profit to provide an example of the divorce between business interests and community interests (p. 142).

He was critical of the neo-classical conception of demand that neglected the role of habit and the endogenous nature of preference and in an example of his wit and the literary flourishes of his writing he stated:

> The hedonistic conception of man is that of a lightning calculator of pleasures and pains, who oscillates like a homogeneous globule of desire of happiness under the imuls of stimuli that shift him about the area. ... He has neither antecedent nor consequent. He is an isolated, definitive human datum, in stable equilibrium except for the buffets of the impinging forces that displace him in one direction or another. ... When the force of the impact is spent, he comes to rest, a self-contained globule of desire as before (1919b, p. 73-74).

He saw marketing and advertising as another example of the disconnection between the business interest and the community interest. He stated that advertising disturbs trade and is "of slight if any immediate service to the community" while it is "indispensable to most branches of modern industry" (1904, p. 32-33). A firm with 'good will,' Veblen noted, need not engage in price competition and, with its limited sort of monopoly, could restrict output in order to garner the largest possible profits. Veblen included "established customary business relations, reputation for up-right

dealing, franchises and privileges, trade-marks, brands, patent rights, copyrights, exclusive use of special processes guarded by law or by secrecy, exclusive control of particular sources of materials" among the elements of 'good will' (1904, p. 70-71). He believed it to be an important determinant of the profits earned by a business.

Acknowledging the wide-spread existence of various forms of market power means one of neo-classical analysis' most important results does not hold: allocation, in the form of wages and profits, being "fixed by the final productivity of labour and capital" (Clark, 1908, ¶XI.8). This argument, as articulated by Clark, relies upon an equilibrium state as well as the assumption of perfect competition. He noted that every "sub-group" of the economy must have the correct amount of each factor as will be allocated through competition or else "values are in a disturbed and abnormal state" (¶ XXIII.2). If each factor is remunerated according to their contribution then power within the system has no importance, notwithstanding questions of 'to whom the returns to capital are allocated' or 'how they came to possess that capital'. As well, if all producers are assumed to be atomistic price-takers whose sole activity is production then they have no means of exercising power.

Neo-classical economists recognize that the assumption of atomistic producers is an unrealistic description of the real-world economy. The justification is made that "just as frictionless models in physics can describe some important phenomena in the physical world, the frictionless model of perfect competition generates useful insights in the economic world" (Varian, 1992, p. 216). However, this argument is problematic on at least two grounds: (1) it assumes that the impact of the frictionless model on the analysis of physical phenomena is analogous to the impact of the perfect competition model upon the analysis of economic phenomena, and (2) economists use the outcomes of the unrealistic perfect competition model when they make policy recommendations[9].

This exclusion of market power is of benefit to those with economic power. As J. K. Galbraith (1973) has noted, the exclusion of power from the dominant analysis makes the discipline an "influential and invaluable ally of those whose exercise of power depends on an acquiescent public" (p. 10-11). Analyses that demonstrates the problems with unions, minimum wage legislation, welfare, unemployment insurance, etc., largely depend upon the results of the perfectly competitive model. Any plea for a good or service to be 'left to the market' also depends upon this assumption and its coincident assumption of restricted producer behaviour. The dominant school of thought within the discipline has, since Adam Smith, excluded from its analysis the power of ownership and the social ills it can create.

While Veblen focused on restriction of output or 'sabotage' as the expression of market power, his broader understanding meant that restriction was not as straight-forward as the neo-classical model's conception of production occurring where marginal revenue equals marginal cost. It included the utilization of influence to pecuniary advantage. Sabotage was the willful restriction of production for the purpose of maintaining the price at a certain level. The industrial system, in Veblen's theory, does not operate at full production. Instead, business tried to sell as much as possible *at the highest price possible*. This means industry will almost certainly be restricted below its full capacity. This process, he referred to as "charging what the traffic will bear" (1904, p. 31).

Veblen insisted that the use to which productive goods are put by business enterprises are not for the purpose of service to the 'community,' but for service to the owner. In order to serve the pecuniary demands of ownership, Veblen declared that "circumstances make it advisable for the business man at times to mismanage the processes of industry" (1919b, p. 359). To allow "a free run of production would ... be ruinous for business" (1923, p. 96). Veblen believed industry should serve the demands of communities. Curtailment of production meant the industrial machinery was

not maintained at such a level of output or allowed to develop in a manner that would serve the interests of the general population.

The means to 'sabotage' production in order to keep prices high assumes that businesses have market power. Veblen asserted that this is so, although it did not mean that he denied the role of competition among firms. Instead of price competition, he observed 'business competition' meaning "a competitive endeavour to realise the largest net gain in terms of price" (1923, p. 94). This he conceived of as a competition of salesmanship. Businesses try to gain market share without having to lower their price. This they do through such actions as product differentiation.

Some of the gains available from disturbance of the productive system, Veblen observed, are made possible by the interdependent nature of the economic system. He noted that any disruption or restriction of the industrial system "immediately affects the neighbouring or related branches which come before or after it in the sequence" (1904, p. 14). Disturbance, he asserted, interrupts the balance of the system and this alters the values attached to the goods produced. In the adjustments of the system there exist possibilities for profit that certain firms and industries will be best placed to exploit.

Schumpeter (1934) similarly insisted that "error, mishap, indolence, and so forth become ... a continual source of loss, but also of profit" (p. 32). However, unlike Veblen, he did not acknowledge the interest in willful disturbance that business possesses. The gains to be made by what Veblen called the 'interstitial adjustments,' meaning the disturbances of the industrial system, had become most readily available to the businessman with the development of the machine process (1904, Ch. 3). Veblen believed that the industrial revolution had increased interdependence among producers. This provided greater opportunity for willful disturbance that could be exploited for pecuniary gain.

The interlocking nature of the industrial system was a central aspect of Veblen's analysis. He observed that:

> [T]he industrial system is a concatenation of processes, which has much of the character of a single comprehensive, balanced mechanical process. A disturbance of the balance at any point means differential advantage (or disadvantage) to one or more of the owners of the sub-processes between which the disturbance falls (1904, p. 18).

A disturbance at one part of the system, Veblen asserted, through its affects on preceding and subsequent industries, can upset the entire economy. The interdependence of industries, he believed, meant that a disturbance upon or within the system may give businesses cause to act in concert, even in the absence of overt or formal collusion. In fact, Veblen expressly stated that it is "common pressure" not "shrewdly balanced sabotage" that motivates joint action (1923, p. 224). This joint action, being common driven by pecuniary interests, he insisted, "nowise expresses the collective interest" (1919b, p. 305).

Of particular importance, Veblen identified what he called the "key industries." The rest of the industrial system, he believed, "is conditioned from day to day on the rate, volume, and balance of work and output in these key industries" (1923, p. 214). It is not only the volume of output of these industries that affects the rest of the economy, but also the rate at which it is produced. The decisions about what rate and volume to produce will be made on a pecuniary basis. This will then influence the decisions of those industries dependent upon their output. These subsequent decisions will also be made in response to the pecuniary interest. This means the system will not be functioning at full production, as assumed in the neo-classical model.

The power to dictate the level and rate of production within these 'key industries' confers power that can be used to 'disturb' the rest of the economy. Veblen insisted that if the controlling businessmen believes such disturbance will result in profit and accumulation then they will

undertake such disturbances.

Veblen observed that "sabotage can best be taken care of in the large." This means the large corporations that control a large portion of a single industry or several industries are "in a particularly fortunate position to administer the routine of salutary sabotage" (1923, p. 112-113). Wider control confers greater ability to restrict output and so accumulate. Expanded ownership becomes a means and a consequence of the effort to accumulate capital. This explains part of the growth of 'internal economies' that have coincided with the rise of the modern corporation (Coase, 1952; Chandler, 1977, 1990; Pitelis & Sugden, 1991).

Veblen focused on the restriction of output as the "chief method of control" and "chief material consequence" of control by business (1923, p. 215). However, he also considered the process of both business and industrial innovation. His conception of the matter and of the effects the business control of industry had on innovation were often contradictory.

In distinguishing between the economic activities into business and industry Veblen also conceptualized the businessman and the engineer. He vilified the former as being interested solely in pecuniary gain, and hence undertaking 'sabotage,' contrary to the community's interests. He valorised the latter as industrious and scientifically interested in improving productivity, the purpose of which was to serve the community.

Veblen's assertion that business and industry are separate entities and that business is only concerned with production as a means to an end led him to comment that while "ownership directly touches the results of industry" it is only indirectly concerned with "the methods and process of industry" (1919b, p. 296). To Veblen, the engineer is engaged with the 'industrial arts' and is the source of technological progress. In the engineer's continual pursuit of novel processes and products, businessmen perceived a threat to their interests. Given the businessman's interest in

pecuniary ends and maintaining price at a certain level, Veblen insisted that he does not want excess production. Yet, he noted, "technicians are forever occupied with contriving new ways and means" to create "inordinate productive capacity" (1923, p. 230). 'Inordinate productive capacity' he defined to mean "beyond ordinary needs of business in ordinary times" (p. 230-231n). The engineer he viewed as responsible for the "irrepressible new technological advances [that] are forever running out new ramifications of industry" (1923, p. 232). The 'remedy' for this "continued menace to the equilibrium of business," he observed, "is always a business-like sabotage" (p. 97).

Veblen recognized that business has an interest in the particular innovations that are undertaken. However, he articulated conflicting expressions by which this interest would be manifest. In one statement he noted that "the pecuniary classes have some interest in so adapting the pecuniary institutions as to give them the best effect for acquisition of private gain" (1899/1994, p. 129). He is restricting business' interest in innovation to only those within business itself. Business control of industrial innovation he perceived as largely responsive rather than creative. However, he also acknowledged that there may be cases "comparatively slight and infrequent" in which "the business men in control push the advance of industry into new fields and prompt the men concerned with the mechanics of the case to experiment" (1904, p. 27).

Veblen later made an allowance in his analysis that control of industry by business meant businessmen make decisions not only of how much output will be produced and at what pace, but also what the production would look like. He stated that control by business was "an organization of new ways and means in the way of industrial processes" (1923, p. 209-210). In an attempt to finely delineate between the activities of the businessman and those of the engineer, he stated that the businessman cannot "create or initiate methods or aims for industry" because if he does "he steps out of the business sphere into the material domain of industry" (1919b, p. 298). Yet, earlier in the

same article he asserted that "industrial processes and plants adapt themselves to the exigencies' of the market ... and the exigencies of the market are pecuniary exigencies" (p. 297). Later, he noted that "industry must be conducted to suit the business man in his quest for gain" (1919b, p. 298). These contradictions could be partially explained as Veblen making the distinction – as Schumpeter later would – between invention and innovation. However, he never clearly articulated such a position.

On the one hand, Veblen perceived industrial change as a continual process emerging from the industrial system that businessmen must deal with to maintain their pecuniary interests. On the other hand, he saw businesses' control over industry extending to the underlying productive processes. Veblen's initial position on the source of innovation helps explain the undeniable productivity growth of the 20th century that his idea of 'sabotage' would appear to contradict. However, it contradicts the control over industry that Veblen observed.

Veblen emphasized the importance of economic influence on society. With business dictating the functioning of the economy he asserted that "the exigencies of modern life are commonly pecuniary exigencies" (1919b, p. 245) and as such "the large business man controls the exigencies of life under which the community lives" (1904, p. 8). Veblen conceived of society as "a scheme of institutions" which he defined as "an outgrowth of habit" (p. 241). The concept is much broader than the common use of the term 'institution' to mean establishment or organization. Geoffrey Hodgson defined the term to mean "an outgrowth of the routinized thought processes that are shared by a number of persons in a given society" (2003, p. 125). The actions of individuals within the society are influenced by institutional norms and standards. However, these norms are themselves changing through the actions of individuals. In this way, Veblen conceived of the institution as the site of both cultural change and cultural stability.

Economic institutions, Veblen characterized as "habitual methods of carrying on the life process of the community in contact with the material environment in which it lives" (1899/1994, p. 120)[10]. Given the centrality of economic activities in society, Veblen viewed them as important influences in the evolution of institutions. This influence came by way of the technology of industry as well as the marketing efforts of business. In addition to these, he believed the businessman has a direct influence on society because of the status conferred upon the wealthy and powerful.

The influence of the businessman is not exercised solely within the realm of activities that most economists consider their sphere of analysis. Although this influence can be utilized to achieve economic ends, namely pecuniary gain, it is excluded from consideration because it is characterized as non-economic behaviour. While certain activities, such as lobbying, are not strictly economic in nature, in the sense of emerging as consequences of production, exchange or consumption, they impact upon the economic system and have their source within the economic system. Firms or industry groups that engage in lobbying expect economic payoffs. As well, the means to conduct lobbying – a prohibitively expensive activity for many businesses – emerge from earlier accumulation within the economic system. Other activities, such as technological and organizational innovation must be considered economic activities. Schumpeter's analysis of internal change focused on these sorts of activities.

One of the influential aspects of modern technology that Veblen noted was 'standardization.' He wrote: "The machine has become the master of the man who works with it and an arbiter in the cultural fortunes of the community" (1904, p. 153). Veblen contended that the standardization of the machine process resulted in the standardization of society itself and served a disciplinary purpose. He did not view this standardization to be entirely negative, as he believed it created a quantitative precision (1904, Ch. 9). However, he did acknowledge that there may be negative

consequences upon the diversity of skill and intelligence of the worker.

The pecuniary interest dictates that the labourer be solely a quantitative addition to the machine process. It is in the interest of the businessman to structure the economy in such a way that social institutions discipline standardization in the population. Standardization eases the production process, the sale process and even social discipline. Technological and organizational innovations that are implemented by the business will have further influence upon the social institutions. This influence would not be overlooked by the businessman interested in pecuniary gain.

Veblen also recognized the influence of the businessman upon the political realm. Government is absent from the basic neo-classical model. However, since Adam Smith there has been a general hostility towards the interference of government in what are considered economic affairs. It is believed to 'distort the market.' However, such claims of distortion pre-suppose a 'normal' outcome based upon perfect competition in a Walrasian equilibrium.

Veblen saw the businessman's interests in influencing government policy. He observed that a new form of mercantilism was emerging in capitalist societies. However, this new mercantile economy, he believed, was not the same sort criticized by Smith, in which business was directed in order to serve the King or government. "The modern mercantilism," Veblen asserted, "looks to the prince or to the government as a means to the end of commercial gain" (1904, p. 136). Veblen noted that this influence is often accepted and defended because of the high regard accorded to the businessman.

Veblen believed that the influence of the businessman was bestowed upon him by an honour afforded the wealthy. That influence, he felt, could then be used to accumulate greater wealth. He stated that the more wealth possessed the more merit accorded. Business has a interest, he observed, in allowing "the underlying population to believe that the common good was bound up with the

business advantage" (1923, p. 113-114). This meant that

> the management of the affairs of the community at large falls by common consent into the hands of business men and is guided by business considerations. ... Legislation, police surveillance, the administration of justice, the military and diplomatic service, all are chiefly concerned with business relations. ... All this apparatus is also charged with the protection of life and personal liberty, but its work in this bearing has much of a pecuniary color (1904, p. 128).

It was this influence by business on the institutions of the community that concerned Veblen. This was his reason for asserting that economic theory must be a theory of businesses' "methods, aims, motives, and effects."

The pecuniary interests of the business class, as Veblen observed, did not perfectly align with the interests of the community. Yet, the power of the businessman meant that they exercise control over the community's resources and technologies. He noted that, on the whole, the elites of the business class are conservative in nature. Despite internal competition for market share, all businessmen shared an interest in maintaining the status quo of the social structure in which they possessed wealth and power. The interest in maintaining the social status quo while struggling for differential success creates stability with change. However, each variation alters the system in such a way that further variations become necessary. This is the process of cumulative causation and the reason why Veblen rejected the equilibrium state even as a limiting condition.

Schumpeter, innovation and economic change.

J. A. Schumpeter is an enigmatic figure in the world of economics. Although an admirer of Léon Walras, he was an ardent critic of the neo-classical model's focus on equilibrium and its exclusion of internal forces of change[11]. In part due to the lack of mathematical formalization in his theories, he is not a standard figure in the mainstream discourse of the discipline. Despite this, he is revered by many in the business world for his insights on the functioning of real world capitalist economies. The *Wall Street Journal* (1986) once referred to him as "that wisest of economists." Although a defender of the capitalist system as the best possible form of economy, he greatly admired capitalism's most famous critic – Karl Marx[12]. He was a mentor to leading Marxist intellectual Paul Sweezy, as well as early evolutionary economist Nicholas Georgescu-Roegen.

For Schumpeter, innovation as a source of disturbance which upsets equilibrium, was an important feature of economies. He identified it as the true method of competition used by business. He also said that it is the developmental force that advances economies. Schumpeter believed the innovation process to be the most active in capitalist economies and he analysed the source of innovation in a capitalist context. He asserted that the dynamics created by innovation should be an explicit aspect of market models and for this reason was critical of neo-classical analysis.

It would seem to be a truism to assert that economies are dynamic. While neo-classical theory explicitly considers dynamics, it is in an equilibrium context where the dynamic element is movement from one equilibrium to another. The movement becomes necessary only by way of externally caused changes to parameters. Schumpeter (1934) rejected the idea that only external disturbances move the system and stated that neo-classical theory's failure to recognize internal change is "the most important single reason for what appears unsatisfactory to us in economic theory" (p. 60n). He said that an explanation of economic change "is obviously among the tasks of

pure theory" (p. 61).

Schumpeter used the word 'innovation' to describe how change emerges through purposeful action within the economic system. This put him into direct conflict with the neo-classical model. General equilibrium is a static outcome of the model, in which change, including technological change, can only come from outside the system. Neo-classical dynamics is actually an explanation of how the system returns to equilibrium once disturbed. Its method of analysis, 'comparative statics,' describes "how the optimal choice changes as a parameter changes" (Varian, 1992, p. 491). In a state of general equilibrium, there is no room for change, except by way of external influence.

The results of the neo-classical model depend strongly upon examination of a state in which changes are isolated and as a result their effects dwindle until the system is again in equilibrium. A disequilibrium in one market, will cause disequilibrium in other markets through interdependence. Walras recognized this. However, he asserted that the secondary effects of the disequilibrium on other markets "will be less appreciable than the primary effect" (1874/1954, p. 179). Although, if the secondary effects are greater then the disequilibrium in a single market will generate disequilibrium is additional markets which will move the system further from, not closer to equilibrium. By assumption, cumulative feedback making a disturbance have a greater, not lesser, impact on the system is eliminated.

The result of the static analysis holds if there is no change in technology, no change in consumer preferences, no change in the structure of the market, no external disturbances such as a change in the supply of labour or other inputs. Nelson and Winter (1982) wrote: "The continued reliance on equilibrium analysis, even in its more flexible forms, still leaves the discipline largely blind to phenomena associated with historical change" (p. 8).

This blindness means that the model cannot explain the subsequent consequences of

endogenous variation, ie. how agents within the system react to changes that emerge from within the system. According to Veblen, the theorists of what he called 'marginal utility economics,' have not "contributed anything at all appreciable to a theory of genesis, growth, sequence, change, process, or the like, in economic life" (1919b, p. 232).

Schumpeter, in addition to disagreeing with the neo-classical model making disturbance an external phenomenon, believed that economic theory should examine the causes of these disturbances. He noted that J. B. Clark had examined several types of disturbance. Of these, Schumpeter asserted, "changes in technique and in productive organisation ...require special analysis and evoke something different again from disturbances in the technical sense" (1934, p. 60n). As noted above, he relegated other types of disturbances to the status of non-economic phenomena.

Schumpeter later wrote that

> the opening up of new markets, foreign or domestic, and the organization development from the craft shop and factory to such concerns as U.S. Steel illustrate the same process of industrial mutation – if I may use that biological term – that incessantly revolutionizes the economic structure *from within* (1950, p. 83; emphasis in original).

In addition to illustrating his conflicted relationship with evolutionary theory, this statement emphasizes that the process of economic change comes from within the system itself. As well, he made a point to stress that the process is the same whether it emerges from within the small 'craft shop' or inside a large concern, such as U.S. Steel. It was this 'mutation' that Schumpeter labelled 'innovation.'

The process of innovation, as one of the economic activities internal to production, is excluded from the neo-classical model. If a system is in equilibrium each element of that system must be perfectly suited to the conditions that prevail, as a result would be no need for or means to innovate. Each firm's supply would add up and exactly match the demands of the consumers. As

Schumpeter (1934) put it: "In the circular flow there would be no idle stocks for the needs of the entrepreneur" (p. 96).

If we understand the system in neo-classical terms, then there must be no means by, and no need for which to divert from the current course of action. Each firm would be producing where marginal cost equals price. Each consumer would be consuming where their relative marginal utilities equals the relative prices. Under these conditions consumers will have maximized their constrained utility and producers will have maximized their profits. There would be no way for any individual agent to improve their position through any of the actions available to them: production, exchange and consumption. In a twist of irony, by the equilibrium outcome of the neo-classical model, the competitive market has no room, nor need for any sort of competition at all.

The model does not deny that change occurs. However, that change is conceived of as an outside disturbance, where exogenous forces cause a change to the parameters of the system which must then settle into a new equilibrium. One of the more literary descriptions about the nature of disturbance came from Walras (1874/1954):

> Such is the continuous market, which is perpetually tending towards equilibrium without ever actually attaining it, because the market has no other way of approaching equilibrium except by groping, and, before the goal is reached, it has to renew its efforts and start over again, all the basic data of the problem, e.g. the initial quantities possessed, the utilities of goods and services, the technical coefficients, the excess of income over consumption, the working capital requirements, etc., having changed in the meantime. Viewed in this way, the market is like a lake agitated by the wind, where the water is incessantly seeking its level without ever reaching it. ... just as a lake is, at times, stirred to its very depths by a storm, so also the market is sometimes thrown into violence confuses by *crises*, which are sudden and general disturbances of equilibrium (p. 380-381; emphasis in original).

Eugen von Böhm-Bawerk (1891) asserted that "frictional disturbances are innumerable" (¶ IV.VII.19) and ensure that production will not be carried out under ideal conditions. Despite the prevalence of disturbances and the fact that the economic system is never actually at equilibrium,

Walras' defended the 'pure economic' analysis because "the more we know of the ideal conditions of equilibrium, the better we shall be able to control or prevent these crises" (p. 381).[13]

The fundamental result of the neo-classical model is that equilibrium occurs "*where marginal cost and marginal revenue are in balance*" (Samuelson, 1948, p. 500; emphasis in original). In an economy in which all markets are perfectly competitive this outcome is deemed just by the criterion of Pareto optimality. This result is evidence that neo-classical theory keeps with its classical predecessor and retains the underlying belief that the social good is best realized through the pursuit of private benefit.

The neo-classical result equating the Walrasian equilibrium with Pareto optimality depends upon the several assumptions, including those of pure competition and maximizing behaviour[14]. In the neo-classical model the price-taking firm faces a horizontal demand curve, which means it faces a horizontal marginal revenue curve. All producers, choosing the production level where marginal revenue equals marginal cost – or equally, where the demand curve is tangent to the average cost curve – will be producing the largest efficient amount, and consequently earning zero profit.

In recognition of the fact that few markets could be described as perfectly competitive, the assertion is made that with free entry the producer, even if it possesses 99.9 per cent of the market, will not restrict output because "it would cease to sell 99.9 per cent of the output or even anything at all" and instead "would find its maximum advantage in behaving like a pure competitor" (Samuelson, 1947, p. 79).

Walras (1874/1954) recognized that his theory of 'pure economics' was an abstraction. However, he and the other forefathers of neo-classical theory believed that a pure theory of economics could describe the immutable natural workings of the economic system. According to Philip Mirowski, these early neo-classicists achieved the theory "through the wholesale

appropriation of the mid-nineteenth century physics of energy" (Mirowski, 1989, p. 196). Mirowski has demonstrated that with the rise of 'field theory'[15] in physics' offered economists "the definitive epistemic break between classical and neoclassical economics" as it allowed economists to adopt "their own field theory of value, which we now call neoclassical theory" (p. 201). He observed that "all the major protagonists of the Marginalist Revolution explicitly stated in their *published* works from when they derived the inspiration for their novel economic theories" (p. 218; emphasis in original)[16]. For example, Stanley Jevons explicitly stated the analogous concordance between the physics of energy and economics: "The notion of value is to our science what that of energy is to mechanics" (quoted in Mirowski, p. 219).

The physics of energy, or 'energetics,' was part of an attempt to realize what Mirowski called the "Laplacian Dream." He observed that the 'Laplacian Dream' described how "science aspired to discover the single mathematical formula that described the entire world" (1989, p. 27-28). Walras admitted to both the appropriation and the desire to achieve the 'Laplacian Dream' when he asserted that the "pure theory of economics is a science which resembles the physico-mathematical sciences in every respect" and "the return to reality should not take place until the science is completed and then only with a view to practical application" (1874/1954, p. 71).

For Walras, and consequently his neo-classical descendants, it is only "the play of blind and ineluctable forces of nature" that constitute natural phenomenon and are therefore available as "the subject matter of what is called *pure natural science* or *science* properly speaking" (1874/1954, p. 63; emphasis in original). Jevons expressed his affinity for the concept of a single immutable law when he asked: "Must not the same inexorable reign of law which is apparent in the motions of brute matter be extended to the subtle feelings of the human heart?" (quoted in Mirowski, 1989, p. 219). The Laplacian ideal was indifferent to history and held that all phenomena is the determined

outcome of this grand equation.

Ilya Prigogine and Isabelle Stengers (1984) called the appropriation from energetics "unfortunate ... because the area of physics where these concepts and methods are valid was very restricted" (p. 207). The mid-nineteenth century era of physics which provided the concepts and methods was criticized by Prigogine and Stengers because while "science initiated a successful dialogue with nature ... the first outcome of this dialogue was the discovery of a silent world. ... It revealed to men a dead, passive nature, a nature that behaves as an automaton which, once programmed, continues to follow the rules inscribed in the program" (p. 6).

In the creation of an economy that behaves as an 'automaton' the early neo-classicists invented a producer whose only course of action is to choose a production technology. With the choice of a technology, the determined result is to produce where marginal revenue equals marginal cost. Change in the level of production will only occur if an external disturbance disrupts the equilibrium.

While Schumpeter was a great admirer of Walras' he nonetheless had a problem with the belief that only external disturbance creates change. He demonstrated that even if we start from equilibrium, the disturbances that alter the system provide profit opportunities (1932, p. 32). This profit then becomes the means by which 'new combinations' are financed. These new combinations then provide further profit. If we accept that producers are wholly self-interested, as neo-classical assumptions insist they are, then it is not difficult to accept that those profits will be used to maintain their advantageous, non-equilibrium position.

Producers do not simply accept their position within the economy. They are able to generate changes. These changes then alter the conditions of the system as a whole and require further adaptation. If changes can emerge spontaneously then the standard assumption behind maximizing

behaviour – rational expectations – will not hold. Participants in the system will not be capable of perfectly foreseeing all developments. As Kenneth Arrow (1986) stated: "A complete general equilibrium system ... requires markets for all contingencies in all future periods. Such a system could not exist" (p. S393). The contingencies that emerge cannot be dismissed as external disturbances. Many of the most important alterations will emerge from within the system itself.

For Schumpeter, innovation was the process by which the economy developed from within. He distinguished between innovation and 'invention.' The confusion of the terms he believed to be misleading as "it is entirely immaterial whether an innovation implies scientific novelty or not" (1939, p. 84). As well, he noted that invention need not result in innovation. Schumpeter's formal definition of the innovation he stated as "the setting up of a new production function" (p. 87). He did not restrict himself to the examination of the process of creating new products or processes. He identified five forms that innovation can take: (1) The introduction of a new good, (2) the introduction of a new method of production, (3) the opening of a new market, (4) the conquest of a new source of supply of raw materials or half-manufactured goods, and (5) the carrying out of a new organisation of any industry (1934, p. 66). All of these activities allow for more diverse action than choosing a level of production.

Schumpeter called the carrying out of new combinations 'enterprise' and the individual responsible, the 'entrepreneur.' With his differentiation between invention and innovation he stressed that the inventor of the new combination may not necessarily be the innovator. He stressed that an entrepreneur can only be addressed as such "when he actually 'carries out new combinations,' and loses that character as soon as he has built up his business, when he settles down to running it as other people run their businesses" (1934, p. 78).

Schumpeter saw the entrepreneurial process as an on-going one and stated that "new

possibilities are continuously being offered by the surrounding world, in particular new discoveries are continuously being added to the existing store of knowledge" (1934, p. 79). Schumpeter questioned why such possibilities emerge, when agents within the economy could instead accept the regular, known circumstances.

Schumpeter characterized the equilibrium situation as the 'circular flow' of the economy. In his dialectical response to the query of 'why change emerges,' Schumpeter offered "three corresponding pairs of opposites" all three of which are essentially the opposition of what he called 'statics' and 'dynamics.' The former refers to the tendency to equilibrium. The latter, he asserted in a statement that echoed Veblen, means the emergence of "a change in the channels of economic routine or a spontaneous change in the economic data arising from within the system" (p. 82-83). His belief in a 'spontaneity' of change marks a departure from the neo-classical belief in immutable laws.

In another coincidence with Veblenian theory, Schumpeter believed in the "fundamental dependence of the economic aspect of things on everything else" (1932, p. 58). He viewed the economic aspects of life within the context of the broader social existence. Given his views on the matter, Schumpeter's belief in 'methodological individualism' – the idea that society can only be studied as the sum of its individual parts – seems contradictory (Hodgson, 1993, p. 148).

Also similarly to Veblen, Schumpeter emphasized the role of habit in maintaining the state of the system. He disputed the notion of rationality assumed by the neo-classical model and viewed most action as largely automatic[17]. By this, he believed most human activity is not reducible to either conscious or unconscious decision-making. Rather, many actions are simply the result of the repetition of the familiar.

Schumpeter (1934) viewed action within the context of socially learned behaviour and

continuity of action. Innovation, on the other hand, requires action "outside these accustomed channels" (p. 84) and as such, the innovator is without the usual information that is known within "accustomed channels." Such behaviour, although dealing with uncertainty, Schumpeter believed to be more consciously rational than in following habitual behaviour (p. 84-85).

It is important to stress the role of intent and choice in the innovation process. As Schumpeter stressed, innovation is distinct from invention. Technological inventions, as well as potential new markets, new sources of raw materials, or new organization forms – to consider all forms of innovation as outlined by Schumpeter – can emerge and be known. However, it is their implementation that matters from the economic standpoint. This involves non-deterministic choice as "technology does not, indeed cannot, determine itself" (Melman, 1979, p. 96). New technologies or other types of innovations are not simply lined-up along a historical shelf waiting for their discovery or implementation. The process takes place in a social context and for a particular purpose.

The ongoing process of innovation, Schumpeter famously designated "Creative Destruction" (1950, ch. 7). He asserted that this is the process by which capitalists actually engage in competition. Rather than the price competition of traditional economic theory, he said that what matters is "the competition from the new commodity, the new technology, the new source of supply, the new organization" (p. 84). The emergence of innovation, or even just the possibility of innovation, by a potential competitor spurs each entrepreneur within the system to pursue their own innovations. Of course, innovation occurs within a system that is largely following "accustomed channels." The interplay between the continuity of action and innovation gives the system a dynamic stability.

Schumpeter accentuated the continuous nature of innovations. He also saw them as

interdependent and said they tend to cluster in both time and industry. This was because one successful innovation "will disrupt the existing system and *enforce a distinct process of adaptation*" (1939, p. 101; emphasis in original). Any innovation will, by way of competitive struggle or interdependence of production, require or encourage other economic agents to respond. There will be some within an industry who seek to emulate the leader. Or, they may attempt to introduce a competing or complementary innovation. The disturbance creates more than just the base response to a change in parameters as in the neo-classical concept of economic dynamics. It was the on-going nature of innovation and its effects upon the economic system that led Schumpeter to label the process 'economic evolution' even though he had previously asserted that "the evolutionary idea is now discredited in our field" (1934, p. 57).

Schumpeter (1939) declared that the building of railroads to replace mail coaches was "the standard example by which to illustrate ... the essential features of our evolutionary process" (p. 304). He even termed the process whereby a 'superior' technology supplants an 'inferior' one, 'railroadization' (p. 325-351). Analysis of the development of the railroad and its impact upon national economies was extensive in his two volume work *Business Cycles*. In the building of the railroad Schumpeter saw the innovative process involving a flurry of technological improvements – such as new types of cars and engines – each of which complemented or improved upon some other innovation. However, he also identified the increased consolidation of the industry as innovative. He believed this to be a necessary feature of the process and asserted that it was accompanied by productive efficiency (p. 403). While he acknowledged that there were detrimental aspects to some business action he downplayed these as being less important and he excluded such actions from being considered innovative.

Schumpeter's (1934) rejection of the maximizing self-serving rationality of the neo-classical

model of behaviour extended to his view of the entrepreneur. In his description of the motives of the entrepreneur, he observed more than just the satisfaction of wants. He asserted that entrepreneurs cease their innovative activities only when they must. Such action, he wrote, "does not seem to verify the picture of the economic man" because "activity of the entrepreneurial type is obviously an obstacle to hedonist enjoyment of those kinds of commodity which are usually acquired by incomes beyond a certain size" (p. 92). According to Schumpeter, the motives behind entrepreneurial activity include: (1) The creation of a realm of private power and independence, (2) a desire to conquer, (3) to succeed for the sake of success, and (4) for the joy of creating.

Schumpeter asserted that the financial motive is secondary to these and, in a statement reminiscent of Veblen's concept of 'conspicuous consumption,' he stated that the display of accumulated wealth is "very often more important as a motive of large expenditure than the wish for the consumers' goods themselves" (p. 93). The reaping of pecuniary gain, Schumpeter wrote, is of importance as an expression of relative success among businessmen. However, the use of accumulated wealth to fund further innovations, he believed to be of greater importance.

The funding of further innovation was one of the reasons that Schumpeter felt monopolies and oligopolies are not as detrimental to economic production as neo-classical theorists believe. He argued that "market power is the price that society must pay for rapid technological advance" (Nelson & Winter, 1982, p. 278). As previously noted, in the Marshallian model a monopoly restricts output to below the level at which a competitive market would produce. This restriction of output is considered socially detrimental. Schumpeter, on the other hand, saw this as the source of funding that would generate new innovations.

Schumpeter believed that the process of 'Creative Destruction' ensured that challengers were continually rising up to compete with dominant firms. Dominant firms, he observed, recognize that

new challenges will be emerging and as such they innovate as a means to preserve their positions. In this way the restrictive practices of the monopoly serve to generate the profits that allow for further innovation. However, they also provide longer-term stability for the monopolist. Despite attempts by the dominant firms to maintain their place in the hierarchy, Schumpeter (1939) observed that "new [firms] rise and others fall into the background." The reason for this, he believed, is that "innovations still emerge primarily with the 'young' ones, and the 'old' ones display as a rule symptoms of what is euphemistically called conservatism" (p. 97).

Schumpeter viewed the changes that had occurred in the productive process as ones which served the social interest – as progress. Contrary to Veblen, Schumpeter did not see the functioning of 'Big Business' as being contrary to the benefit of society. He observed that "the modern standard of life of the masses evolved during the period of relatively unfettered 'big business'" (1950, p. 81). He believed that it is in the innovative process that any negative aspects of 'Big Business' become less consequential.

The equation of innovation with progress and development continues to be implied in the analyses of most evolutionary economists who rely upon Schumpeterian innovation as the means of variation. All evolutionary economists "agree, more or less explicitly, on the crucial role which novelty plays in economic change" (Witt, 2001, p. 49). Ulrich Witt asserted that there are different conceptions of innovation, one of which is Schumpeter's. This notion of innovation, Witt characterized as meaning the undertaking of major new initiatives.

This characterization is faulty and appears to draw upon Schumpeter's glorification of the entrepreneur as a rare and unique individual. He celebrated the entrepreneurial process and contrasted it with the "mere running of an established business, which is largely a matter of routine" (1934, p. 91). However, while he mythologized the entrepreneur as being of an uncommon and

elevated nature and as being the source by which economies evolve, he also "stressed innovation as deviation from routine behaviour, and argued that innovation continually upsets equilibrium" (Nelson & Winter, 1982, p. 41). This deviation need not be grand to be a break from routine behaviour, it simply needs to be novel.

The production of novelty is a characteristic of the competitive economy. Nelson and Winter's 1982 book *An Evolutionary Theory of Economic Change* formalized the evolutionary hypothesis of economic change into models. The pair made Schumpeterian competition central to their analysis. Such competition is understood as "competitive advantage gained through innovation" (p. 203). It is the on-going process of innovation-adaptation-innovation that is part of what makes the system evolutionary.

Economic evolution and 'evolutionary economics'.

Both Veblen and Schumpeter are important figures in the evolutionary economic school of thought. Veblen's early invocation of Charles Darwin's theory and his notion of cumulative causation earned him a place in the esteem of evolutionary economists. Evolutionary thought in economics has also been closely aligned with the institutionalists who were influenced by Veblen. Schumpeter's relationship with evolutionary theory was ambivalent and cautious. However, regardless of his own beliefs as to the usefulness of evolutionary concepts in understanding economic systems, those currently working within the evolutionary economic framework frequently apply his conceptualization of innovation as the source of variation required for the process.

There is an immediate surface desirability in appealing to the theory of evolution to explain economic dynamics. The theory is one of internal change, and the dynamics of Veblen and Schumpeter both focus on this sort of change. However, in making our own argument, we must take care not to misrepresent the theory. Any time the concepts and principles of one discipline are used to garner an understanding within another, the possibility exists that a metaphorical explanation will create greater confusion than clarity. Hodgson has noted that the biological metaphor can lend itself to a reductionism that eliminates the role of human action and choice. However, he has asserted that despite certain dangers and pitfalls,

> the application of an evolutionary approach to economics seems to involve a number of advantages and improvements over the orthodox and mechanistic paradigm. For instance, it enhances a concern with irreversible and ongoing process in time, with long-run development rather than short-run marginal adjustments, with qualitative as well as quantitative change, with variation and diversity, with non-equilibrium as well as equilibrium situations (1993, p. 32).

While biological systems – being the best known evolutionary systems – may provide evocative metaphors for understanding economic evolution, they can not, should not and need not be

analogized in their entirety. In fact, "evolutionary theory is a manner of reasoning in its own right, quite independently of the use made by biologists. ... What matters are variety, selection and development – not the natural world" (Metcalfe, 2005, p. 420). This means any system that has replication with variation and a selection mechanism is evolutionary. The use of evolutionary thought in economics need not be simply metaphorical, if we can demonstrate that there are mechanisms of replication with variation and selection.

The publication of Charles Darwin's (1859) *The Origin of Species* transformed biology, science and society. Darwin's discovery introduced variation and indeterminacy into biological systems. Prior to him "the *immutability* of species was the undisputed canon of classical biology" (Dopfer, 2005, p. 12-13; emphasis in original). Evolutionary theory challenges the framework of mechanistic physics that viewed systems as metaphorical clockworks. It makes systems the product of variable historical phenomena. By the 'Laplacian' vision, if time were turned back to any point in history, all systems would follow the same path they had travelled the first time. However, the continual process of variation and selection mean that, contrary to Newtonian mechanics, historical events are not, as a matter of course, reversible or repeatable.

Adaptation, in Darwin's theory, is an endogenous process. As noted, variation is one of the necessary mechanisms of the evolutionary process. In the mechanistic paradigm, however, "there is no endogenous change in the system ... there is only continuity of motion (dynamics) or rest (statics); there is no self-caused spontaneous change" (Dopfer, 2005, p. 12). The use of biological analogies in economics has long had great appeal. In fact, "the two-way relationship between biology and economics dates from the very emergence of these modern sciences in the eighteenth and nineteenth centuries" (Hodgson, 1993, p. 55). As Alfred Marshall (1890/1961) noted that "economics, like biology, deals with a matter, of which the inner nature and constitution, as well

as the outer form, are constantly changing" (p. 772). The evolutionary analogy is particularly alluring for those interested in economic change. Economies are the outcomes of historical processes and show continual change of both a gradual and punctuated nature. As well, economies involve the interaction of biological creatures who must be subject to evolution as are all species.

According to Geoffrey Hodgson (2005), "the biological metaphor was widely invoked in economics and in social science as a whole in the 1890-1914 period" (p. 105-106). However, by the 1920s the analogies of mechanics were dominant. Interest in the use of the theory of evolution to describe economies did not re-emerge until the latter part of the century. During the early period of interest, Veblen's was one of the first and most provocative uses.

Foreshadowing those who would later separate evolutionary principles from the field of biology to argue that they are more broadly applicable to dynamic systems, Veblen "saw [Darwinian science] as a loom upon which the whole fabric of economic thinking could be rewoven" (R. Hofstadter, 1959, pp. 152-155; quoted in Hodgson, 2005, p. 114). In part, Veblen's formulation of an economic analysis that bears witness to evolutionary thought is based upon the influence of early Social Darwinists, such as William Graham Sumner and Herbert Spencer (Hodgson, 1993, ch. 9). He maintained that " the life of man in society, just like the life of other species, is a struggle for existence, and therefore it is a process of selective adaptation" (1899/1994, p. 117). His eventual repudiation of the Social Darwinist aspect added nuance to his analysis. His discussion of evolution must be considered distinct from that of the Social Darwinists, who were more enamoured of the phrase 'survival of the fittest' as an argument in support of racial superiority, than they were in the idea of evolution as a process of historical change. Veblen's views on economic evolution were much closer to what Darwin intended with his theory.

Veblen was among the first economists to invoke evolutionary theory when he asked, in the

title of an 1898 paper, *Why is economics not an evolutionary science?* His query was wittily asking both why the discipline itself has not evolved and why in its failure to evolve it had not incorporated Darwin's evolutionary theory as had other sciences. In that paper, Veblen asserted that the classical economists – among whom he would have counted those now considered to be part of the neo-classical tradition – "fall short of the evolutionist's standard of adequacy, not in failing to offer a theory of a process or of a developmental relation" (p. 376). Rather, the shortcoming of (neo-) classical theory is in the insistence upon a "natural law" where "a sequence ... must be apprehended in terms of a consistent propensity tending to some spiritually legitimate end" (p. 378).

Veblen disagreed with what he felt to be classical science's – and therefore economics' – attempt "to formulate knowledge in terms of absolute truth" (1898, p. 378). This creates a static understanding of economic activity. Rather, he felt that economic systems had to be understood as active systems and that "economic action must be the subect-matter of the science if the science is to fall into line as an evolutionary science." Veblen believed that the attempts made to account for economic change "followed the lines of pre-Darwinian speculations on development rather than lines which modern science would recognize as evolutionary" (p. 388).

For Veblen, the matter of interest "is not how things stabilize themselves in a "static state," but how they endlessly grow and change" (quoted in Hodgson, 1993, p. 130). It is not the consummation of the process that is important, but its cumulative causation with the ends becoming the means for further ends. He concluded that "an evolutionary economics must be the theory of a process of cultural growth as determined by the economic interest, a theory of a cumulative sequence of economic institutions stated in terms of the process itself" (1898, p. 393).

As noted above, Alfred Marshall, the acclaimed synthesizer of the neo-classical paradigm, had sympathy for the dynamic nature of economies. He wrote that "those properties of an economic

institution which play the most important part in fitting it for the work which it has do now are ... likely to be in great measure of recent growth" (1890/1961, p. 50). This continual change, and the relative importance of the most recent changes, Marshall lamented, makes it difficult to classify things in any static manner.

However, while Marshall (1890/1961) wrote that "the Mecca of the economist lies in economic biology" he also insisted that "biological conceptions are more complex than those of mechanics; [therefore] a volume on Foundations must therefore give a relatively large place to mechanical analogies" (p. xiv)[18]. Marshall was not alone among the early neo-classicists in his recognition of real-world economic dynamics. However, neither was he alone with his continued emphasis on mechanical analogies for 'equilibrium' analysis. Jevons (1871/1957) stated that "the real condition of industry is one of perpetual motion and change" and thus, "if we wished to have a complete solution of the problem in all its natural complexity, we should have to treat it as a problem of motion." He justified the use of static analysis on the grounds that "it would surely be absurd to attempt the more difficult question when the more easy one is yet so imperfectly within our power" (p. 93). Clark (1898) believed that "the great coming development of economic theory is to take place ... through the statement and the solution of dynamic problems" (p. 2). Yet, the neo-classical tradition remains focused on the static equilibrium. While Marshall displayed an increasing ambivalence to the mechanical analogy and its static outcome, "most of his followers did not share his reservations" and "by the time of Marshall's death in 1924, the dialogue between economics and biology had virtually ceased" (Hodgson, 1993, p. 107).

Schumpeter (1950) complained that the focus on the principle of perfect competition, "as far as it can be proved at all, applies to a state of static equilibrium." This he felt missed the essential point that "capitalist reality is first and last a process of change" (p. 77n). Schumpeter explicitly

invoked the term 'evolution' to describe this process of change when he lamented neo-classical theorists' failure to recognize "that in dealing with capitalism we are dealing with an evolutionary process." He finds this failure strange given that it was "long ago emphasized by Karl Marx" (p. 82).

While Schumpeter placed "great emphasis on 'broad patterns of economic evolution, on "Grand Questions" such as the determinants of long-term change in the structure of the economy' (G. Dosi, 1990, p. 335)" (Hodgson, 1993, p. 151), there is disagreement over whether his theory of development can be considered evolutionary (see Kelm, 1997; Hodgson, 1997). Hodgson asserted that Schumpeter's use of the term bears more in common with the etymological root of the term evolution – *evolvere* – which means to unfold or unroll. He never conceptualized a selection mechanism that is one of the necessary aspects of an evolutionary process in the Darwinian sense[19]. Whether or not Schumpeter's theory of economic change is explicitly evolutionary, his ideas are invoked by modern evolutionary theorists, such as Richard Nelson and Sidney Winter (1982) who observed: "The influence Joseph Schumpeter is so pervasive in our work that ... the term 'neo-Schumpeterian' would be as appropriate a designation for our entire approach as 'evolutionary'" (p. 39). As Esben Sloth Andersen (1994) wrote, Schumpeter is "a major discussion partner for much of the work within the new evolutionary economics" (p. 187).

Schumpeter described his own task as analysing "the facts of autonomous change in a closed domain." He believed that his treatment should begin "with the construction of the model of an unchanging economic process" (1939, p. 35). He felt the starting point of a dynamic analysis is the static equilibrium and that a dynamic system is continually moving toward the static state (Hodgson, 1993, ch. 10). In this he differs from Veblen who completely rejected static theories.

Schumpeter was not the only economist who tried to wed evolutionary ideas with the static

outcome of neo-classical models. A. A. Alchian (1950) argued that a selection process exists that chooses more profitable firms over less profitable firms. He attempted to demonstrate that because of this 'natural selection' process the maximization result of the neo-classical model holds, whether or not producers are conscious profit-maximizers.

Alchian's argument was supported by Milton Friedman (1953) who maintained that whatever the "determinant of business behaviour ... – habitual reaction, random chance, or whatnot ... whenever this determinant happens to lead to behaviour consistent with rational and informed maximization of returns, the business will prosper" (p. 22). The argument is that even with uncertainty, the hypothesis of profit maximization holds because the outcome is the same as if producers had full knowledge: those who maximized profit survive, those who did not, go out of business. Friedman refers to the process as 'natural selection.' Friedman was offering a justification for the utilization of unrealistic assumptions in the neo-classical model of rational maximization among atomistic competitors. He wished to demonstrate that even with these unrealistic assumptions the neo-classical model is a useful and accurate description of real-world economic outcomes.

While both Schumpeter and Friedman tried to combine aspects of evolutionary thought with the equilibrium of the neo-classical model, their focuses and purposes were very different. Where Schumpeter wished to bring endogenous change into the model and used the equilibrium position as a starting point for understanding, Friedman wished to demonstrate that although economics are dynamic they produce a result that is the same as in model's static equilibrium. In keeping with Schumpeter's focus on the importance of monopolistic competition and the profits from that process he fundamentally disagreed with the neo-classical notion of competitive maximization because,

> a system ... that at *every* given point of time fully utilizes its possibilities to the best advantage may yet in the long run be inferior to a system that does so at *no* given point of time, because the latter's failure to do so may be a condition for the level or speed of long-run performance (1950, p. 83; emphasis in original).

This is directly opposed to Friedman's conception of the real-world economy in agreement with the neo-classical model's predictions.

The reasoning used by Friedman and Alchian to defend the neo-classical model was criticized as the application of a "half-assimilated idea from Darwinian biology to reinforce the mechanistic paradigm of neoclassical economics" (Hodgson, 2005, p. 130). The argument used by both authors assumed the evolutionary process is moving in a determined direction and selection results in an optimum. This common belief in evolution as an optimizing process is based in part on Darwin's use of the phrase "survival of the fittest."[20] However, the idea that evolution is an optimizing process has been largely rejected. As Hodgson (1993) stated: "Evolution is not necessarily a grand or natural road leading towards perfection. Change can be idiosyncratic, error can be reproduced and imitated, and a path to improvement can be missed" (p. 201).

Together with his early biological conception of evolution, Veblen also originally equated evolution with progressive advance, although he later criticized those who perceive a "beneficent trend; so that 'evolution' is conceived to mean amelioration or 'improvement'" (1919b, p. 55). Veblen's conception on social evolution focused on institutional change as the source of the variation that is required for an evolutionary process. He remarked that "institutions must change with changing circumstances. ... The development of these institutions is the development of society" (1899/1994, p. 118). However, he did not view this change as necessarily progressive.

While institutional economists have infused their analyses with the concept of innovation they have recognized that variation through innovation need not be beneficial for society.

Institutional economists Paul Bush and Marc Tool (2001) have stated that it is "technological innovation ... that provides the stimulus for social change" (p. 209). However, they stressed that "an unambiguous distinction between evolution and progress must be maintained if we are to understand the nature of the processes of cumulative causation." Evolution, they write "is manifested in adaptive changes in socially prescribed patterns of behaviour" (p. 219). They perceive the relationship between technological innovation and evolution as the influence of the former on 'patterns of behaviour.' This is unnecessarily restrictive in terms of its focus on technological change. It also appears unnecessarily restrictive in its focus on the impact of innovation on 'patterns of behaviour.' However, they note the relationship between "extensive and elaborate change" and the "minimal dislocation" that means both major and minor innovations will impact society. As well, the concept of cumulative causation means each innovation will necessitate further innovations, all of which will impact upon social behaviour. This "may or may not result in 'progress'" (p. 219). In contrast to either evolution or cumulative causation, progress is the notion that change within society are of net benefit to the population. We do not need to define exactly what would entail progress in order to accept that changes need not necessarily be beneficial or desirable.

The distinction between the concepts is important if we are to understand innovation as a force of change that is implemented by business for pecuniary, not productive purposes. It is here that the concepts of market power and motives become important. In order to determine to whom the benefits of an innovation accrue, we must understand the motivation behind the innovation.

'Big Business,' market power and innovation.

Theorists working within the separate traditions of Veblenian and Schumpeterian thought have drawn out interesting and unique observations from the works of the two authors. However, cross-over between the two traditions has been limited. In the above sections, the ideas of each theorist was considered largely in isolation of those of the other, although similarities between their theories were noted. The section on evolutionary economics and economic evolution drew together their distinct views on evolution as well as those who followed upon their work.

The purpose of this next section is to synthesize their unique analyses of market power and draw out some of the implications of this combination. Veblen's insights on market power focused on the separation of business and industry and the former's exercise of control over the latter. Schumpeter's insights focused on the innovative process as the primary method of monopolistic competition. A synthesis of these insights allows us to see how business directed innovation drives the evolution of the capitalist economic system. We can also understand the innovative process as neutral from the welfare perspective and not inherently progressive.

As noted in the section on Veblen, he did not view the process of economic change as necessarily being in the social interest. Schumpeter, although critical of the neo-classical model, shared its allegiance to Adam Smith's famous phrase, 'the invisible hand' – which summed up his assertion that the pursuit of private interests will necessarily ensure the greatest benefit for the society – and viewed the market system as being favourable to the alternative of socialism.

The continuity between neo-classical and classical theory can be seen in neo-classical thought's retention of Smith's term as a rhetorical device. Samuelson has summed up the connection that exists between the two traditions of thought thusly:

> Adam Smith, in his talk about an Invisible Hand which leads the selfish actions of individuals toward so harmonious a final result, did have some point. Smith never could state or prove exactly what the point was, but modern economics can state this property of ideal competitive pricing: under perfectly perfect competition, where all prices end up equal to all marginal costs, where all factor-prices end up equal to values of marginal products and all total costs are minimized, where genuine desires and well being of individuals are all represented by their marginal utilities as expressed in their dollar voting – then the resulting equilibrium has the efficiency property that 'you can't make any one man better off without hurting some other man' (quoted in Hunt, 2002, p. 461).

However, as John McMurtry (1999) has observed, "Smith supposed a set of *powerfully qualifying conditions*" on the equivalence of selfish action and social well-being, including no private monopoly or oligopoly of production, and no collusion of trader and sovereign (p. 43-44; emphasis in original). McMurtry emphasized that in the real world economy, "every one of Smith's classical principles of the free market has been turned into its effective opposite" (p. 45; emphasis removed). While the conditions of the textbook neo-classical model, as stated in Samuelson, are more formal, like Smith's conditions, they are not found in real-world capitalist economies. In particular, both models, in their idealized conception of the market function, eliminate market power. However, as both Veblen and Schumpeter observed, such power is the rule, not the exception.

While the neo-classical model considers the case of pure monopoly – as noted in the section on Veblen – the analysis focuses on price competition. Yet, real economies are dominated not by pure monopolies, but by 'monopolistic competitors'[21]. As well, price is a limited weapon of such competitors, with innovation playing a significant role. As previously noted, once power is introduced into an understanding of the market, the neo-classical model's theory of distribution does not hold[22]. Veblen articulated an alternative conception of capital that agreed with his differentiation between business and industry. It also explicitly included the power of business, both within the productive realm and the social realm:

> [I]f the concept of capital were elaborated from observation of current business practice, it would be found that 'capital' is a pecuniary fact, not a mechanical one; that it is an outcome of valuation, depending immediately on the state of mind of the valuers; and that the specific marks of capital, by which it is distinguishable from other facts, are of an immaterial character (1919b, p. 197).

He specifically targetted Clark's argument regarding the 'natural' returns to capital and labour as being based upon the productivity of each. Veblen stressed that the capitalisation process – the discounted future stream of expected profits – is a financial process, not a productive process. Further, he maintained that it is based upon business' *control over production*, not upon production itself. For example, he observed the importance of 'good will' in the capitalisation of a business. He noted that although advertising and other means of product differentiation are of no direct benefit to the community, they "give a differential advantage to their owners" in terms of profit and accumulation (1904, p. 70-71). He noted that the capitalisation of a business fluctuates independently of the underlying material facts of production:

> The market fluctuations in the amount of capital proceed on variations of confidence on the part of investors, on current belief as to the probable policy or tactics of the business men in control, on forecasts as to the seasons and the tactics of the guild of politicians, and on the indeterminable, largely instinctive, shifting movements of public sentiment and apprehension. ... under modern conditions the magnitude of the business capital and its mutations from day to day are in great measure a question of folk psychology rather than of material fact (1904, p. 74).

Jonathan Nitzan and Shimshon Bichler have expanded upon Veblen's conception of the social aspect of capital to argue that "every power arrangement which systematically affects the flow of profit is a potential facet of capital." Among the power arrangements, they note: military spending, apartheid laws, organised crime, 'energy conflicts,' marketing and advertising, patent laws and protectionism (2002, p. 10-11). They stress the relative nature of power and argue that accumulation is a differential process of trying to 'beat the average.' Accumulation is not simply for accumulation's sake. The power that ownership affords is the objective of business activity.

Economies are often described using the metaphor of material 'flows' through society (Dyke, 1988; DeLanda, 1997). The metaphorical conception can be seen in Schumpeter's description of the equilibrium state as "a 'circular flow,' running on in channels essentially the same year after year" (1934, p. 61). Innovation, in Schumpeter's analysis, is the breaking out of this 'circular flow,' i.e. the transformation of the channels. This concept can help in the understanding of the importance of control over production. Charles Dyke (1988) stated that economies "depend on finding ways of keeping material flows at a suitable rate" (p. 117-118). However, he does not clarify: 'Suitable to whom and for what?' Veblen offers an answer: the accumulating businessman.

Ownership of industry by business confers the power to control the particulars of material flows. Business can dictate the rate and intensity of the flows as well as the productive and consumptive channels through, and to, which it flows. Businesses discretion over the implementation of innovation result in alteration of these channels. However, the flow of profits, as Nitzan and Bichler stressed, is not just based upon the flow of material through production. It is based upon the 'power arrangements' of business. A profit-seeking business will exert influence over all aspects of society that will bear upon its profits. All of the activities that business undertakes to exercise this influence should be considered 'innovation.' As with the other sorts of innovation, these too contribute to economic evolution as they change the structure of the economy and provoke adaptation by other market participants in the form of innovation for the purpose of differential accumulation.

Schumpeter thought that the assumption of perfect price competition and the result of the neo-classical model – "a maximum satisfaction of wants" – was unnecessary in extolling the virtue of private competitive enterprise (1950, p. 77n). As noted in the section on Schumpeter, he believed that competition takes the form of continual innovation rather than price-cutting. He viewed this

process as progressive and the key to capitalism's desirability. His view of the methods of competition has been supported by business historian Alfred Chandler, Jr., who noted that once an industry becomes oligopolistic the firms that are dominant "no longer competed primarily on the basis of price. Instead they competed for market share and profits through functional and strategic effectiveness" (1990, p. 8).

Schumpeter (1934) acknowledged that the implementation of innovation is primarily a business decision and noted that "the engineer may recommend a new process which the commercial head rejects with the argument that it will not pay" (p. 12). However, this does not explain the particular motives that determine which innovations are implemented: Where the payoff is uncertain, and choices conflict, how does implementation occur? What criterion does the businessman use to make his decisions? As well, it does not tell us whether or not this criterion will then ensure the innovation is in the social interest.

Schumpeter reduced the importance of the financial motive to a secondary concern. However, if we instead adopt Nitzan and Bichler's extension of Veblen's conception of business motivation, then the implementation of innovation occurs based upon its perceived impact upon 'differential accumulation.' The pursuit of innovation is for this very purpose.

Veblen acknowledged that "a modicum of serviceability, for some purpose or other, the output must have if it is to be salable." However, in keeping with his analysis, he added that "it does not follow that the highest serviceability gives the largest gains to the business man in terms of money, nor does it follow that the output need at all cases have other than a factitious serviceability" (1904, p. 30). While he stressed business' concern with the vendibility of the output of industry, his conflicted ideas of innovation, as noted earlier, means he did not fully develop the consequences of business control on the innovation process. He noted that the businessman "can decide whether and

which of the known processes and industrial arts shall be practiced, and to what extent" (1919b, p. 298), but he continued to stress the process of 'sabotage.' The ability to restrict production to maintain price requires a degree of market power. If market power is eroded or erased, then 'sabotage' can no longer serve its purpose of profit and accumulation. Innovations are the means of both maintaining and challenging dominance.

Contrary to Veblen's view of innovation as generating excessive production, from the pecuniary point of view, which must therefore be dealt with by the businessman, the technician is an important element of business success. Business requires innovations to mount and stave-off challenges to domination. The technician serves as the discoverer, inventor or designer of a *potential* innovation. Therefore, business is not in conflict with the technician because it requires the technicians' skills and discoveries.

In a modern context, innovation is closely related to the ownership of intellectual property. It is not necessarily the discoverer, inventor or designer who brings novelty to fruition. It is the holder of the intellectual property rights. Given the concentration of ownership within many industries, the developers of potential innovations are often dependent upon the dominant businesses to provide the outlet for their discoveries. This is one of the means by which powerful businesses wield their influence upon the innovative process. They can not only direct the in-house research and development, they can also purchase intellectual property rights, even if it is only for the purpose of keeping the potential innovation away from a potential competitor. Schumpeter acknowledged this when he conceded that there is some validity to the complaint that in oligopolistic markets "the maintenance of the value of existing investment .. becomes the chief aim of entrepreneurial activity and ... the capitalist order becomes incompatible with progress" (1950, p. 96). Among the diverse means available to business for acquiring potential product and process

innovations, all are dependent upon the technician. It is the technician that creates the novelty that makes Schumpeterian competition possible. The businessman is not oblivious to this and he exercises his control over industry to influence the directions of the technician efforts. As well, engineers and designers are not immune to financial influence meant to direct their creative efforts.

The above focuses on the product and process aspect of innovation. However, it should be remembered that Schumpeter stressed that innovation includes more than this; it includes the creation of new organization forms, the opening of new markets and the discovery of new sources of resource inputs. Of course, as Nitzan and Bichler have emphasized, there is also a social aspect of profit and accumulation. Here too, innovation is important. Of course, all other avenues of innovation are ultimately dependent upon production. If there is no material flow, then the businessman has no power.

Veblen's notion of innovation as a matter to be dealt with by business gives an impression of passivity in the wake of inevitable technical change. However, business does not simply accept change as inevitable and simply try to influence it. It actively pursues innovation. The stable status quo only has appeal for the dominant member of an industry. However, in most industries, the dominant firms must contend with challenges from the sub-dominant firms. Therefore, all businesses innovate. These innovations generate a need for adaption by other businesses, which change the economic 'environment' creating need for even more adaptation. Stanley Metcalfe (2005) summarized the process as "initial variation, selection, and revised variation" (p. 396). This is precisely the process of cumulative causation that Veblen felt was the force behind on-going economic change. In this way monopolistic competition is a disequilibrating phenomena and therefore the equilibrium state cannot be considered the limiting condition.

While Marshall (1890/1961) acknowledged the existence of different forms of monopolistic

competition and opened the way for its inclusion in neo-classical theory, he focused his equilibrium analysis on the purely competitive market structure. The two earliest efforts to incorporate monopoly and imperfect competition into the Marshallian framework were the near simultaneous 1933 offerings of Edward Chamberlin (1962) and Joan Robinson (1969). Robinson ultimately called her work a "wrong turning" because "instead of abandoning the static analysis [she] worked out the *Economics of Imperfect Competition* on the static assumption" (1951, p. vii-viii). She recognized that monopoly and dynamics must be understood together. She believed that formal models should deal with the realities of both.

Both Veblen and Schumpeter have noted the opportunities for profit that emerge from disturbance. Like Robinson, they too saw the efforts of monopolistic firms as part of the dynamic process of economies. The changes that occur from disturbance are the force that make the system dynamic in addition to providing important opportunities to differentially accumulate. Veblen saw the means of disturbance as the restriction of output by those in the 'key industries.' However, some innovations may result in increased output. These will be welcomed by the business that controls the innovation if it reduces costs and it can monopolize the novelty. This is contrary to Veblen's assertion that 'sabotage' is always the remedy.

The on-going efforts to accumulate while faced with constant challenges means that for many businesses the process of innovation and adaptation is an on-going one. Not every innovation is the telephone or limited-liability corporation. However, this does not diminish the importance of the small innovations that continually contribute to altering the state of the economy. As Nelson and Winter emphasized, innovation itself becomes routine (1982, p. 132-134). The routine includes the implementation of both major and the minor innovations[23]. To describe innovation in such an inclusive way may appear to make the term overly broad and therefore, impractical. However, if

we are going to understand the motives behind the economic changes that emerge from within the system, as well as their consequences, then it is necessary to include all scales of change within the analysis,

Schumpeter noted that established firms will innovate in the face of what he called "the perennial gale" of competition (1950, p. 90). However, he emphasized the role of the challengers, which he called "aggressors by nature" (p. 89). It was the sub-dominant firms that he believed necessarily improve quality and quantity in their challenges of established firms and therefore drive the developmental process. However, as Chandler and Takashi Hikino (1997) have noted, "the large industrial enterprise has remained a central institution in the dynamics of modern economic growth" (p. 56; emphasis removed). Even Samuelson (1948) acknowledged this reality when he wrote that "because research and advertising are expensive and their results cumulative, success tends to breed success, and profits tend to breed more profits" (p. 514). Braudel stated it more succinctly: "Money ... meant the freedom to obtain more" (1982, p. 384). 'Big Business,' wielding its 'money' in an effort to obtain more, has been overwhelmingly responsible for most of the changes to the structure of the capitalist system of business and industry. However, regardless of whether it is large, dominant firms or small, aggressive sub-dominant firms that are generating innovation, these novelties cannot be assumed to be progressive.

As noted earlier, Schumpeter labelled as 'railroadization' the process by which new consumer goods, new methods of production, new markets and new forms of industrial organization supplant their predecessors. Taking Schumpeter's chosen example, the building of the railroads, which Alfred Chandler, Jr. (1965) labelled America's "first Big Business," we can see how the innovative process includes a range of activities greater than just those that serve the social interest. While Schumpeter applied his progressive interpretation of the role and purpose of innovation within

the railroad industry, it was also an important industry for what Matthew Josephson (1962) labelled the "Robber Barons." At the forefront of bringing the railroads to fruition were "great money subsidies totaling many hundred of millions" (p. 52).

The acquisition of these subsidies was due, in part, to the lobbying of politicians by the businessmen who financially backed the railroads and stood to gain from their success. The political realm also gave business cheap land grants. As well, the government mobilized its military and bureaucracy to deal with 'hostiles' that had to be cleared from the land, whether by conquest or treaty.

The rise of the railroads also marked the beginnings of modern corporate finance (Chandler, 1965). The men at the forefront of the 'railroadization' process were not those with technical know-how, but what Veblen would have called 'Captains of Solvency' (1923, p. 113-114). Much of the finance of railroad building was speculative. The major backers used this speculation to manipulate the values of railroad stocks as a means of consolidation (Josephson, 1962). Consolidation was called "one of the most prominent characteristics of the American railway system" (Van Oss, 1965, p. 177). The railroads even used their political influence to urge the legalization of cartels (Chandler, 1977, ch. 10).

The railroads also depended upon the manipulation of public sentiment. The construction effort was touted as an essential aspect of 'nation-building' and in the U.S. was hyped as an aspect for the fulfilment of their 'Manifest Destiny.' Success by the railroads was promoted as the success of the nation itself (Josephson, 1962, Ch. 4). Even the financial wrangling of the controlling powers generated excitement and became part of the public mythology[24]. This 'good will,' as Veblen called it, is part of the 'intangible capital' of the railroad (1904, p. 70-75) that Veblen believed is an important aspect of profit. The capitalised values of the businesses that were behind the building

and operation of the railroads were not just based on the value of their underlying physical assets and their levels of production. Because the power relations of ownership influenced the expected flow of profits, this was reflected in the capitalisatised values of the business involved. The value would, therefore, have included a valuation of the market control gained through consolidation, as well as expected returns to the political relations with the government and the 'good will' of public sentiments.

Business has an interest in using its influence to garner 'good will' as Galbraith famously argued in *The Affluent Society*. This interest is evidenced by American businesses spending $143 billion on advertising in 2005 ("TNS Media Intelligence"). Schumpeter acknowledged this interest when he observed that it is "the producer who, as a rule, initiates economic change, and consumers are educated by him if necessary; they are ... *taught to want new things*" (1932, p. 65; emphasis added). The businessman has an interest in 'teaching' consumers to purchase those commodities that generate the greatest profit, not necessarily those things that are of the greatest benefit to society. However, corporations also "recognize that they have a common cause in promoting consumerism in general" (Goodwin, 2005, p. 137).

The management of the corporation, the interests of which may not be perfectly aligned with its owners, is largely judged on its accumulative efforts. This does not mean other reasons are not important. Of particular secondary importance among the motives identified by Schumpeter was the desire for 'kingdom building.' However, the financial reasons are primary and, as Schumpeter noted, a means of judging relative success[25].

Schumpeter observed that the era of the rise of powerful 'Big Business' was also an era of increased quantity, quality and diversity of consumption (1950, p. 81). However, this expansion can only be tautologically universally equated with the general benefit of the community. Of course,

many of the innovations implemented by business have provided society with a 'modicum of serviceability.' But, the purpose of the implementation was to profit and accumulate. As such, many of the innovations, including those achieved through the influence of the political and cultural realms, have been contrary to the community interest. As these innovations are the source of variation that drive the evolution of the economy, development will not necessarily move in a direction that is progressive.

Because the determining factor in the implementation of innovation is the perceived impact of differential ownership, it also serves as the sorting and selection mechanism that completes the evolutionary process[26]. This means that the relative pecuniary gain generated by different innovations will serve to rank their importance for the implementing businesses. Those innovations that reward them with differential accumulation will be maintained and augmented. Those that do not will be abandoned or altered.

For the individual business, this process means an innovation may result in its ascension or descension the hierarchy that is determined by differential accumulation. A business that accumulates through successful innovations will ascend the hierarchy, while a business with relatively unsuccessful innovations – measured in differential terms – will deaccumulate and descend the hierarchy. Schumpeter stated that a business enterprise "dies" because of its "inability to keep up the pace of innovating" (1939, p. 95). More comprehensively, Veblen noted:

> Any industrial venture which falls short in meeting the pecuniary exigencies of the market declines and yields ground to others that meet them with better effect. ... (W)hether it be inferiority of the goods produced, lack of salesmanlike tact, popular prejudice, scanty or ill-devised advertising, excessive truthfulness, or what not (1919b, p. 298-299).

The process is a continual one with each business hoping to increase its ownership share such that it can wield its power over not only production, but many more aspects of society that bear upon the

accumulation process. Of course, as noted, no business is entirely without competition and the process is one of 'initial variation, selection, and revised variation' that ensures, as Veblen believed, there exists no optimal end state.

Conclusion.

In this paper, consideration has been given to several of the important concepts found in the works of Thorstein Veblen and Joseph Schumpeter. Attention has been given to Veblen's separation of business and industry together with his analysis of the control of the latter by the former. From Schumpeter's analysis, this paper has drawn out his well-known conception of innovation as a means of economic competition in a monopolistic market structure. Using the two authors' theories, this paper offers an explanation of how economies change given the realities of businesses power over markets and 'Schumpeterian competition.' The influence of the two authors on the evolutionary economics school of thought has also been considered. Veblen's influence has been largely the result of his concept of 'cumulative causation.' Schumpeter's influence is for his ideas of innovation and competition that have been identified as the source of variation necessary for the evolutionary process.

Veblen and Schumpeter's analyses conflicted with the neo-classical paradigm, which focuses on equilibrium and purely competitive markets. Some of their critiques, as well as those of other authors such as Joan Robinson, have been considered. Both authors saw the neo-classical model as incompatible with some important economic realities. However, neither theorist was a model builder and did not attempt to formalize their critiques. Instead, they began their analyses with what they considered to be the relevant features of actual economies. This paper bears affinity with their approach, as it seeks to illuminate how the dominance of 'Big Business' affects the evolutionary trajectory of capitalist economies.

Neither Veblen, nor Schumpeter, accepted the economic discipline's isolation of certain human activities from the society as a whole. Both recognized these activities as integrated with, and in interaction with, the rest of society. While Schumpeter still worked very hard to delineate

what is and what is not properly within the economists realm of analysis, he began *The Theory of Economic Development* with the assertion that "the social process is really one indivisible whole" (1934, p. 3). Veblen wished to understand the motivations of business in order to understand the influence and impact it has upon society as a whole.

The monopolistic competitive market structure, which is found in most industries, means that businesses engage in more diverse forms of competition than simply price-cutting. 'Schumpeterian competition' – competing innovations – is an important part of the process as each firm seeks an advantage in order to reap 'pecuniary gain.' It is this drive for pecuniary gain, not production of serviceable commodities, that motivates business.

Contrary to the popular equation of 'innovation' with 'invention,' Schumpeter stressed that the former concept is much broader and while it incorporates the creation of new products and processes, it also includes the discovery of new markets, new sources of inputs and new organization forms. In opposition to the normative notion of innovation as a radical transformation that is beneficial to society, this paper has understood the term in such a way so as to include any novelty emerging from within the economic system, regardless of the scale of impact, and regardless of its social desirability.

As firms engage in the innovative process their efforts for pecuniary gain are aimed at entrenching and augmenting their power. As power is a relative concept – the possession of power is in relation to another, not against some objective, external measure – firms seek to 'differentially accumulate.' Nitzan and Bichler have observed that capitalisation, as a measure of the expected future stream of profits, is the primary measure used by businesses to judge their accumulation relative to each other. To differentially accumulate means to increase your capital value at a rate greater than the average – and thereby alter the ownership structure that determines the relative

power of the different firms.

Veblen, and later Nitzan and Bichler, stressed that profits were not simply the returns to the productivity of the capital owned by a firm. Rather, they depend upon the power possessed by the firm through its *control* of production, which includes 'intangible assets,' such as 'good will.' This means that an innovating firm will not just focus its innovative efforts upon the industrial process; it will also seek to influence all those aspects of society that lay outside what are generally considered economic activities, and that bear on profit and accumulation.

If we hope to understand the changes that take place within the economy we must situate economies within their social contexts. Economic activities affect the non-economic elements of life and vice versa. With 'Big Business' in a dominant position in the economic realm, the decisions they make will necessarily influence cultural norms and habits. The innovations that business undertakes will alter both the economic structure and the greater social structure and will influence the future path of the system. Business recognizes this and purposefully seeks to wield its influence as a means of differentially accumulating.

As part of a competitive endeavour with an outcome that necessarily produces 'winners' and 'losers,' the innovative process is one of on-going innovation, adaptation, subsequent innovation. The evolutionary economists have tagged innovation as the source of variation that is needed for an evolutionary system. Because the competitive process is aimed at 'differential accumulation,' this then serves as the sorting and selection mechanism. Successful innovations proliferate and their influence has a significant impact upon society. Their unsuccessful counterparts are left behind and forgotten.

A large portion of Veblen's analysis was on the high status enjoyed by business elites in capitalist economies. Much of the affirmative status they enjoy is supported by an argument that

their selfish pursuits are actually in interest of the public welfare. The argument often invokes the results of the basic neo-classical model. As well, the Schumpeterian argument that innovations develop society contributes to the current praise for 'Big Business.' However, once we incorporate Veblen's analysis of businesses power over industry and its pursuit of pecuniary ends, we can conclude that their innovations – implemented for self-interest, and selected for their pecuniary returns – are not necessarily in the community interest. Understanding innovation as neither inherently desirable nor undesirable, the process can both develop and degrade society. This agrees with a general survey of 20th century economic development that has seen unprecedented growth in material well-being, alongside unprecedented degradation of the environment and increasing social maladies such as depression, substance abuse and suicide (Hamilton, 2004).

The neo-classical discipline should not lament the problems created for its standard model by the prevalence and importance of power, the 'normal' state of disequilibrium, and the feedback that exists between those activities classified as 'economic' and those classified as 'non-economic.' In the words of Paul Samuelson, after he conceded that the phenomenon of technology 'reswitching' creates problems for neo-classical conception of capital: "If all this causes headaches for those nostalgic for the old time parables of neoclassical writing, we must remind ourselves that scholars are not born to live an easy existence. We must respect, and appraise, the facts of life" (1966, p. 583).

Endnotes.

1.The discipline's chosen name for this sort of analysis, comparative statics, reflects this view of change.

2.Joan Robinson once lamented that despite the separate efforts of herself (1969) and Edward Chamberlin (1962) to incorporate an understanding of monopolistic competition into the neo-classical analysis, "perfect competition, supply and demand, consumer's sovereignty and marginal products still reign supreme in orthodox teaching" (1969, p. xii). Her lament remains pertinent to modern theory and to Veblen and Schumpeter's lack of status in the discipline

3.Veblen and Schumpeter's points-of-view were not dissimilar from that of early neo-classical theorist Philip Wicksteed who insisted that "economics must be the handmaid of sociology" (1914, p. 12).

4.It is important to note that the criticisms of the dominant neo-classical paradigm of the economics discipline are criticisms of a basic 'textbook' neo-classical model of general equilibrium. Many of the criticisms to be made are acknowledged by those who work within the tradition. However, responds continue to be made within the orthodox structure and retain many of its shortcomings. As well, most policy recommendations invoke this basic form of the model.

5.Some caution must be exercised in such use of the term 'market.' There are at least three meanings attached to the term 'market': (1) The geographical marketplace – an ancient geographical gathering place of buyers and seller, (2) the theoretical capitalist market – the abstract exchange of competitive buyers and sellers that typifies free-market ideology and neo-classical economic analysis, and (3) the real-world market system of the capitalist economies. The first is the least common meaning, although it is the one that lent the name 'market' to the latter two meanings. It is likely in this context that the laws of supply and demand have the most relevance (Braudel, 1982). The second meaning is the non-geographical place of exchange where consumers and producers exchange goods such that the marginal utility of the former equals the marginal cost of the latter in a uniquely determined price. All participants are assumed to have no power over the price. The final meaning is that of the actual system of exchange that exists in capitalists countries. The deviation from the idealized markets of neo-classical theory is acknowledged. The existence of market-power that allows participants to manipulate the price is recognized.

To use the term 'anti-market' presumes that the firms which are not among the most powerful have no power within their industries and are restricted to 'price-taking' behaviour, with levels of production their only concern as dictated by the laws of supply and demand. However, the term has appeal in its description of the most powerful businesses as not only *not* restricted in the way presumed by the neo-classical model's assumption, but in being able to manipulate the market structure itself.

6. Interestingly, J. B. Clark's son, John Maurice Clark, was a student of Veblen's and followed Veblen's critical analysis of market power and business.

7.Veblen was writing at a time when the neo-classical paradigm was just coming to dominance within the economics discipline. He lumped those economists now considered among the progenitors of the neo-classical model - Jevons, Walras, Clark, Marshall - in with the classical economists and referred to their analyses as "marginal utility theory" (1919b, Ch. 7-8). However, the criticisms he made of their theories still hold for the neo-classical model. Schumpeter was writing when the neo-classical model had become dominant.

8.For a modern example of this, see Langreth, R & Herper, M. (2006, May 8). "Pill pushers: How the drug industry abandoned science for salesmanship." *Forbes*, Vol. 177, No. 10, pp. 94-102.

9.Milton Friedman (1953) offered a more general defence of the use of unrealistic assumption:

> The relation between the significance of a theory and the "realism" of its "assumptions" is almost the opposite of that suggested by the view under criticism. Truly important and significant hypotheses will be found to have "assumptions" that are wildly inaccurate descriptive representations of reality, and, in

general, the more significant the theory, the more unrealistic the assumptions (p. 14).

Alan Musgrave (1984) has argued that this assertion, which Paul Samuelson (1984, p. 189) derisively dubbed the 'F-twist,' is partially true of only negligibility assumptions which are but one type of assumptions. He stated that there are, in fact, three types of assumptions: (1) negligibility assumptions, (2) domain assumptions, and (3) heuristic assumptions.

Negligibility assumptions are that some aspect of reality has little or no impact upon the phenomena being considered. It is by this type of assumption that the effects of friction can be excluded from the analysis of some physical phenomena. Domain assumptions describe the conditions under which a theory is applicable. Heuristic assumptions are those that are known to be false but are intended to be dropped as a theory becomes more general. With regards to this type of assumption, Friedman's defence of neo-classical assumptions is completely false. A significant theory will be a more accurate description of reality in both the axioms that determine it and its predictive outcomes.

We can judge Varian's defence of the neo-classical assumption of perfect competition by the three types of assumptions . Monopolistic competition should not be excluded on negligibility grounds. Models of physical phenomena, such as the movement of the planets, are remarkably accurate even with the exclusion of friction because of the inconsequential impact of friction upon the phenomena. A model of the movement of a feather falling through air that excluded friction would likely not resemble real behaviour because friction has a significant impact upon the feather. In the same way, to eliminate market power will result in predictions of economic behaviour and outcomes that do not resemble the real world phenomena because the effects of market power effects are far from negligible.

Under the domain assumption, Varian's defence restricts the neo-classical model's insights to those economies that operate under perfect competition. Léon Walras acknowledge as much with an assertion that his theory of 'pure economics' is "the theory of the determination of prices under a hypothetical régime of perfectly free competition" (1874/1965), p. 40). By domain assumptions, the model's shortcomings render it incapable of describing the function of economies made up of firms with varying degrees of market power.

As far as heuristic assumptions go, the neo-classical paradigm is not itself static, even if its basic model assumes as much about the economy. Economists working with its confines attempt to deal with the real world phenomena of market power. Keynes' model of unemployment and depression was such an attempt. However, the model with perfect competition at its core remains the standard taught by most economic programs.

10.Veblen's conception of institutions as the defining structures of society made him one of the founding figures of the economic school of thought known as 'institutionalism.' Hodgson described institutionalism as seeing individuals as part of an evolving social culture, regarding institutions as additional or alternative units of analysis, and focusing on processes of cumulative causation (Hodgson, 1993, p. 301). This focus makes the school of thought critical of neo-classical economics and, like Veblen, its consideration of cumulative causation makes it interested in the evolution of society.

11.Schumpeter called Walras "the greatest economist of all time" based upon Walras' formulation of the 'general equilibrium' (Samuelson, 1962).

12.The first four chapters of Schumpeter's (1950) most famous book *Capitalism, Socialism and Democracy*, are all on Marx with titles such as "Marx the Prophet" and "Marx the Teacher." His was a critical reading that nonetheless lauded Marx as an important figure in economic history. This certainly contrasts with Samuelson (1962) who derided the socialist icon as "a minor post-Richardian." Although, it should be mentioned that Samuelson qualified this observation as from the point-of-view of "pure economic theory" (p. 12).

13.Walras' use of a lake metaphor is interesting given J. M. Keynes' complaint about the static focus of neo-classical analysis: "Economists set themselves too easy, too useless a task if in tempestuous seasons they can only tell us that when the storm is long past the ocean is flat again" (quoted in Keen, 2001, p. 177). This is the summation of Keynes' famous dictum that "in the long-run we are all dead."

14.Other assumptions are also necessary to prove this equality, including utility functions being concave, continuous and monotonic. The final condition is particularly objectionable as it says that as a consumer's income increases she will continue to consume the same proportion of the same goods. This is, of course, highly unlikely.

15.Mirowski offered the following concise definition of a physical field: "a spatial distribution of energy that varies with time." He noted that "the format of a field is a set of differential equations describing forces, joined to some variational principle" (p. 66-67). Two popular tools of mathematical economics, the Lagrangian and the Hamiltonian, were both developed in classical mechanics. However, Mirowski observed that they gain importance within field theory and were used in such a way that elevated the mathematical techniques above the material realities they were meant to describe (p. 67).

16.Mirowski noted that Irving Fisher reproduced, in his work *Mathematical Investigations into the Theory of Value and Prices*, a concordance table that translated the physical metaphors of the energetics model into the appropriate elements of his model of an economic market. For example when mechanics refers to 'space' that concords with 'commodity,' where 'force' is a vector in mechanics,'marginal utility' is the equivalent vector in economics (Mirowski, 1989, p. 224-225).

17.In the neo-classical model, a change in a parameter of the system will generate instantaneous and perfect alteration of the system so that general equilibrium will again be realized. While this too is a form of automation, it is of an ahistorical sort.

18.Marshall first wrote these words in 1898 in an article titled "Distribution and exchange." They appeared in the preface to the 5th edition of his major work *Principles of Economics* (Marshall, 1890/1961, Vol. 2, p. 39).

19.For the purposes of this paper, whether or not his theory is evolutionary in a strictly Darwinian sense is immaterial as we will be focusing on Schumpeter's conception of innovation and relating his ideas to Veblen's to create a novel conception of economic evolution.

20.Hodgson (1993, p. 81-82) notes that the famous phrase did not appear in first edition of *The Origin of Species* and that the originator of the phrase was Herbert Spencer, one of the early defenders of laissez-faire economics.

21.Samuelson, in the first edition of his landmark textbook *Economics* (1948), identified monopolistic competition as the dominant market structure in the economy. However, despite the comparative rarity of pure competition or pure monopoly, monopolistic competition was not mentioned until page 492. The much earlier mention in the 1992 14th edition – on page 162 – was not due to an increased recognition of its importance in understanding the functioning of the economy. Rather, it was because of the reduced verbosity in the modern explication of the neo-classical paradigm and the large amount of text devoted to macroeconomic issues.

In the first edition of his text, Samuelson (1948) considered the different ways oligopolistic market structures function. He described one monopolistic form as "monopolies maintained by constant research and advertising" (p. 513-514). Despite this recognition, Samuelson never considered other activities undertaken for the purpose of profit and accumulation, such as lobbying, by businesses enjoying a monopolistic position. Nor did he consider the effect of advertising on the structure of preferences. In the newer editions of the text, advertising is completely absent from the discussion of monopolistic competition (1992).

22.In an alternative, but related critique of the neo-classical theory of distribution, Joan Robinson pointed out that in order to understand profits as the share of produced value accruing to capital, all capital have some underlying abstract unit that makes its valuation objective. However, as Robinson argued, "it is impossible to conceive of a quantity of capital in general, the value of which is independent of the rates of interest" or profit (Harcourt, 1969, p. 371). This means there is a circularity between the value of the capital and amount of profits this value is assumed to determine. Robinson's objection to this conception of capital spawned the 'Cambridge Capital Controversies' that pitted Piero Sraffa and herself against neo-classicist defenders of the concept, such as Paul Samuelson and Robert Solow. Veblen's critique of the theory of distribution and the 'marginalist' conception of capital foreshadowed this debate.

23.Major and minor innovations with their relative impacts upon the system can be analogized to punctuated and gradual changes that are now understood to occur in biological systems. Gradualism was the type of change Darwin emphasized (1859, Ch. 10). He did not believe adaptation could occur in leaps and bounds. However, Niles Eldredge and Stephen Jay Gould (1972), as well as others, now argue that punctuated equilibrium is another evolutionary process. This may occur when a previously occupied ecological niche is quickly vacated due to a natural disaster and a surviving species rapidly evolves to fill that niche. Hodgson (1993) equated Schumpeter's 'Creative Destruction' with 'punctuated equilibrium' (Ch. 10). However, he has overlooked the fact that the 'Creative Destruction' process need not be drastic or revolutionary in its novelty and can be the slow accumulation of small, but continual changes and adaptations.

24.Schumpeter observed that the railroad industry had "spectacular struggles between controlling groups, which exercised the public mind and set everybody talking" (1939, p. 340-341).

25.Some writers have argued that ownership and control should be considered completely distinct aspects of business as increasing layers of management have divorced the one from the other (see Galbraith, 1967; Berle & Means, 1968). However, this is largely a fiction as the direction of most companies is still toward the interests of the shareholders, especially when there are large and dominant shareholders (Zeitlin, 1974). As Max Weber asserted, "By virtue of their ownership ... control over managerial positions may rest in the hands of property interests *outside the organization as such*" (quoted in Zeitlin, 1974, p. 1077-1078). An observation made by Ferdinand Lundberg in 1937 retains its validity: "Exclusion of stockholders from control ... does not mean that large stockholders are excluded from a decisive voice in the management. It means, only, that small stockholders have been [excluded]" (quoted in Zeitlin, p. 1083). Where the small shareholder has abdicated control it is to the large shareholder with whom she believes she has common interest: pecuniary gain. With management commonly judged and remunerated based on its ability to 'beat the average' and differentially accumulate, ownership ensures that its interests are served. Of course, in keeping with the diverse means of striving for this result, and the continual process of change, business practices will vary dramatically.

26.Hodgson (1993) has noted that "Stephen Jay Gould and E. S. Vrba distinguish between 'sorting' and 'selection.'" Sorting means "differential survival rates" while "selection implies causality" (p. 46).

Bibliography.

Alchian, A. A. (1950). "Uncertainty, evolution and economic theory." *Journal of Political Economy,* Vol. 58, No. 3, pp. 211-221.

Andersen, E. S. (1994). *Evolutionary economics: Post-Schumpeterian contributions*. London: Pinter Publishers

Arrow, K. (1986). "Rationality of Self and Others in an Economic System." *The Journal of Business*, Vol. 59, No. 4.2, pp. S385-S399.

Bakan, J. (2004). *The corporation: The pathological pursuit of profit and power*. Toronto: Penguin Canada.

Berle, A. A. & Means, G. C. (1968). *The modern corporation and private property* (Rev. ed.). New York: Harcourt, Brace & World.

Bhagwati, J. (2004). *In defence of globalization*. New York: Oxford University Press.

Böhm-Bawerk, E. von. (1891). *The positive theory of capital* (W. A. Smart, Trans.). Library of Economics and Liberty. Retrieved July 11, 2006 from http://www.econlib.org/library/BohmBawerk/bbPTC.html

Braudel, F. (1982). *The wheels of commerce*. New York: Harper & Row.

Bush, P. D. & Tool, M. R. (2001). "The evolutionary principles of American neoinstitutional economics." In K. Dopfer (Ed.). *Evolutionary economics: Program and scope*, pp. 195-229. Boston: Kluwer Academic Publishers.

Chamberlin, E. H. (1962). *The theory of monopolistic competition: A re-orientation of the theory of value*. (8th ed.). Cambridge, MA: Harvard University Press.

Chandler, A. D., Jr. (Ed.). (1965). *The railroads: The nation's first big business: Sources and readings*. New York: Harcourt, Brace & World.

Chandler, A. D., Jr. (1977). *The visible hand: The managerial revolution in American Business*. Cambridge, MA: Harvard University Press.

Chandler, A. D., Jr. (1990). *Scale and scope: The dynamics of industrial capitalism*. Cambridge, MA: Harvard University Press.

Chandler, A. D., Jr. & Hikino, T. (1997). "The large industrial enterprise and the dynamics of modern economic growth". In Chandler, A. D., Jr., Amatori, F. & Hikino, T. (eds.). (1997). *Big business and the wealth of nations*, pp. 24-57. Cambridge, UK: Cambridge University Press.

Chomsky, N. (1999). *Profit over people: Neoliberalism and global order*. New York: Seven Stories Press.

Clark, J. B. (1898). The future of economic theory. *The Quarterly Journal of Economics*, Vol. 13, No. 1, pp. 1-14.

Clark, J. B. (1908). *The distribution of wealth*. Library of Economics and Liberty. Retrieved July 16, 2006 from http://www.econlib.org/library/Clark/clkDW1.html

Coase, R. H. (1952). "The nature of the firm." In G. J. Stigler & K. E. Boulding (Eds.), *Readings in price theory*, pp. 331-351. Chicago: Richard D. Irwin. (Reprinted from *Economica*, Vol. 4, pp. 386-405, 1937).

Daly, H. E. & Cobb, J. B., Jr. (1989). *For the common good: Redirecting the economy toward community, the environment, and a sustainable future*. Boston: Beacon Press

Darwin, C. (1859). *On the origin of species*. Retrieved July 11, 2006 from http://pages.britishlibrary.net/charles.darwin/texts/origin1859/origin_fm.html

DeLanda, M. (1997). *A thousand years of nonlinear history*. New York: Zone Books.

De Soto, H. (2000). *The mystery of capital: Why capitalism triumphs in the west and fails everywhere else*. New York: Basic Books.

Dofper, K. (2005). "Evolutionary economics: A theoretical framework." In K. Dopfer (Ed.). *The evolutionary foundations of economics*, pp. 3-55. Cambridge, UK: Cambridge University Press.

Dowd, D. (1964). *Thorstein Veblen*. New York: Washington Square Press.

Dyke, C. (1988). *The evolutionary dynamics of complex systems: A study in biosocial complexity*. New York: Oxford University Press.

Eldredge, N. & Gould, S.J. (1972). "Punctuated equilibria: an alternative to phyletic gradualism" [pdf]. Retrieved July 11, 2006 from http://www.blackwellpublishing.com/ridley/classictexts/eldredge.pdf

Friedman, M. (1953). *Essays in positive economics*. Chicago: University of Chicago Press.

Friedman, M. (1962). *Capitalism and freedom*. Chicago: The University of Chicago Press.

Fukuyama, F. (1992). *The end of history and the last man*. New York: Avon Books.

Galbraith, J. K. (1967). *The new industrial state*. Boston: Houghton Mifflin.

Galbraith, J. K. (1969). *The affluent society* (Rev. ed.). Boston: Houghton Mifflin Co.

Goodwin, N. (2005). "The social impacts of multinational corporations: An outline of the issues with a focus on workers." In Chandler, A. D., Jr. & Mazlish, B. *Leviathans: Multinational corporations and the new global history*, pp. 135-165. Cambridge, UK: Cambridge University Press.

Hahnel, R. & Albert, M. (1990). *Quiet revolution in welfare economics*. Princeton, NJ: Princeton University Press.

Hamilton, C. (2004). *Growth Fetish*. London: Pluto Press.

Harcourt, G. C. (1969). "Some Cambridge controversies in the theory of capital." *Journal of Economic Literature*, Vol. 7, No. 2, pp. 369-405.

Hodgson, G. M. (1993). *Economics & evolution: Bringing life back into economics*. Ann Arbor, MI: University of Michigan Press.

Hodgson, G. M. (1997). "The evolutionary and non-Darwinian economics of Joseph Schumpeter." *Journal of Evolutionary Economics*, Vol. 7, No. 2, pp. 131-145.

Hodgson, G. M. (2005). Decomposition and growth: biological metaphors. In K. Dopfer (Ed.), *The evolutionary foundations of economics* (pp. 105-148). Cambridge, UK: Cambridge University Press.

Hunt, E. K. (2002). *History of economic thought: A critical perspective*. Armonk, NY: M. E. Sharpe.

Jevons, H. S. (1956). *The theory of political economy*. New York: A. M. Kelley. (Original work published 1871).

Josephson, M. (1962). *The robber barons: The great American capitalists, 1861-1901*. New York: Harcourt, Brace & World, Inc.

Keen, Steve. (2001). *Debunking economics: The naked emperor of the social sciences*. London: Zed Books.

Kelm, M. (1997). "Schumpeter's theory of economic evolution: A Darwinian interpretation." *Journal of Evolutionary Economics*, Vol. 7, No. 2, pp. 97-130.

Langreth, R & Herper, M. (2006, May 8). "Pill pushers: How the drug industry abandoned science for salesmanship." *Forbes*, Vol. 177, No. 10, pp. 94-102.

Magdoff, H. (1969). *The age of imperialism: The economics of U.S. foreign policy*. New York: Modern Reader.

Marshall, A. (1961). *Principles of economics* (9th ed.) (Vol 1-2). London: Macmillan. (Original work published 1890).

McMurtry, J. (1999). *The cancer stage of capitalism.* London: Pluto Press.

Melman, S. (1979). "The impact of economics on technology." In W. J. Samuels. *The economy as a system of power, Vol. I: Corporate systems*, pp. 83-96. New Brunswick, NJ: Transaction Books.

Metcalfe, J. S. (2005). "Evolutionary concepts in relation to evolutionary economics." In K. Dopfer (Ed.). *The evolutionary foundations of economics*, pp. 391-430. Cambridge, UK: Cambridge University Press.

Mirowski, P. (1989). *More heat than light: Economics as social physics, physics as nature's economics*. Cambridge, UK: Cambridge University Press.

Musgrave, A. (1984). "'Unreal assumptions' in economic theory: The F-twist untwisted." In B. Caldwell (Ed.). *Appraisal and criticism in economics: A book of readings*, pp. 234-244. London: Allen & Unwin.

Nelson, R. R. & Winter, S. G. (1982). *An evolutionary theory of economic change*. Cambridge, MA: Harvard University Press.

Nitzan, J. (1998). Differential accumulation: Towards a new political economy of capital. *Review of International Political Economy*, Vol. 5, No. 2, pp. 169-216.

Nitzan, J. & Bichler, S. (2000). Capital accumulation: Breaking the dualism of "economics" and "politics." R. Palan (Ed.). *Global political economy: Contemporary theories*, pp. 67-88. New York: Routledge.

Nitzan, J. & Bichler, S. (2002). *The global political economy of Israel.* London: Pluto Press.

Pitelis, C. N. & Sugden, R. (Eds.). (1991). *The nature of the transnational firm.* London: Routledge.

Prigogine, I. & Stengers, I. (1984). *Order out of chaos: Man's new dialogue with nature.* Toronto: Bantam Books.

Robbins, L. (1935). *An essay on the nature and significance of economic science*. London: MacMillan and Co., Ltd.

Robinson, J. (1951). *Collected economic papers*, Vol. I. Oxford: B. Blackwell.

Robinson, J. (1953). "The production function and the theory of capital." *The Review of Economic Studies*, Vol. 21, No. 2, pp. 81-106.

Robinson, J. (1969). *The economics of imperfect competition* (2nd ed.). London: MacMillan.

Samuelson, P. A. (1947). *Foundations of economic analysis*. Cambridge, MA: Harvard University Press.

Samuelson, P. A. (1948). *Economics: An introductory analysis*. New York: McGraw-Hill.

Samuelson, P. A. (1962). "Economists and the history of ideas." *The American Economic Review*, Vol. 52, No. 1, pp. 1-18.

Samuelson, P. A. (1966). "A summing up." *The Quarterly Journal of Economics*, Vol. 80, No. 4, pp. 568-583.

Samuelson, P. A. (1984). "Problems of methodology – Discussion." In B. J. Caldwell, ed., *Appraisal and criticism in economics: A book of readings*, pp. 188-193. Boston: Allen & Unwin. (Reprinted from G. C. Archibald, H. A. Simon & P. A. Samuelson. (1963). "Discussion." *The American Economic Review*, Vol. 53, No. 2, Papers and Proceedings of the Seventy-Fifth Annual Meeting of the American Economic Association, pp. 227-236.)

Samuelson, P. A. & Nordhaus, W. D. (1992). *Economics* (14th ed.). New York: McGraw-Hill.

Schumpeter, J. A. (1934). *The theory of economic development: An inquiry into profits, capital, credit, interest and the business cycle* (R. Opie, trans.). New York: Oxford University Press.

Schumpeter, J. A. (1939). *Business cycles: A theoretical, historical and statistical analysis of the capitalist process*, Vol 1-2. New York: McGraw-Hill.

Schumpeter, J. A. (1950). *Capitalism, socialism and democracy* (3rd ed.). New York: Harper & Row Publishers.

Smith, A. (2000). *The wealth of nations*. New York: The Modern Library. (Original work published 1776).

Sraffa, P. (1952). "The laws of returns under competitive conditions." In G. J. Stigler & K. E. Boulding (Eds.), *Readings in price theory*, pp. 180-197. Chicago: Richard D. Irwin. (Reprinted from *The Economic Journal*, Vol. 36, pp. 535-550, 1926.)

Sraffa, P. (1960). *Production of commodities by means of commodities: Prelude to a critique of economic theory*. Cambridge, UK: Cambridge University Press.

Van Oss, S. F. (1965). "Combination and consolidation." In Chandler, A. D., Jr. (Ed.). *The railroads: The nation's first big business: Sources and readings*. New York: Harcourt, Brace and World. (Reprinted from *American railroads as investments*, pp. 64-67, 69-75,

1893).

Varian, H. R. (1992). *Microeconomic analysis* (3rd ed.). New York: W. W. Norton & Company.

Veblen, T. (1898). "Why is economics not an evolutionary science?" *The Quarterly Journal of Economics*, Vol. 12, No. 4, pp. 373-397.

Veblen, T. (1904). *The theory of the business enterprise.* New York: Mentor Books.

Veblen, T. (1919a). *The vested interests and the common man.* Retrieved August 1, 2006 from http://socserv2.socsci.mcmaster.ca/~econ/ugcm/3ll3/veblen/vested.

Veblen, T. (1919b). *The place of science in modern civilization, and other essays.* New York: Russell & Russell.

Veblen, T. (1923). *Absentee ownership: The case of America.* Boston: Beacon Press.

Veblen, T. (1994). *The theory of the leisure class.* New York: Dover Publications. (Original work published 1899).

Walras, L. (1965). *Elements of pure economics* (W. Jaffé, Trans.). Homewood, IL: D. Irwin. (Original work published 1874)

Wicksteed, P. H. (1914). "The scope and method of political economy in the light of the 'marginal' theory of value and distribution." *The Economic Journal*, Vol. 24, No. 93, pp. 1-23.

Witt, U. (2001). "Evolutionary economics: An interpretative survey." In K. Dopfer (Ed.). *Evolutionary economics: Program and scope*, pp. 45-88. Boston: Kluwer Academic Publishers.

Zeitlan, M. (1974). "Corporate Ownership and Control: The Large Corporation and the Capitalist Class." *The American Journal of Sociology*, Vol. 79, No. 5, pp. 1073-1119.

"Principles of tax reform". (1986, April 21). *The Wall Street Journal.*

"TNS Media Intelligence reports U.S. advertising expenditures increased 3.0 percent in 2005," *TNS Media Intelligence.* (2006, February 27). Retrieved June 27, 2006 from http://www.tns-mi.com/news/02282006.htm.