

INSTITUTIONAL ECONOMIC APPROACHES TO TECHNOLOGY

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ABSTRACT

INSTITUTIONAL ECONOMIC APPROACHES TO TECHNOLOGY

Gürkan, Ceyhun

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By probing Thorstein B. Veblen's (1857-1929) and Joseph A. Schumpeter's (1883-1950) views on technology, this thesis aims at displaying an institutional economic approach to technology. Most of the contemporary studies on technological change are under the dominance of neoclassical economics. Because of their inadequacies in revealing the complex structure of technological phenomena due to their adherence to mechanistic and deterministic postulations of orthodox economic theory, an institutional approach to technology has become a must. Therefore, today, the fundamental ideas of Veblen and Schumpeter concerning technology are used heavily to constitute an alternative approach by evolutionary and institutionalist economists in their technical, philosophical, sociological and methodological studies. In this sense, this thesis, based upon a

comparative analysis of Veblen and Schumpeter, is engaged with presenting an alternative conceptual framework for science and technology policy studies.

Keywords: Technology, Veblen, Schumpeter, Institutional Economics

ÖZ

TEKNOLOJİYE KURUMSAL İKTİSADİ YAKLAŞIMLAR

Gürkan, Ceyhun

Yüksek Lisans, Bilim ve Teknoloji Politikası Çalışmaları Bölümü

Tez Yöneticisi: Prof. Dr. Eyüp Özveren

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Bu tez Thorstein B. Veblen (1857-1929) ve Joseph A. Schumpeter'in (1883-1950) teknoloji üzerine görüşlerini inceleyerek, teknolojiye kurumsal iktisadi bir bakış açısı sunmayı amaçlamaktadır. Günümüzde teknolojik değişimle ilgili yapılan çalışmaların neoklasik iktisadın egemenliğinde olduğu ancak bu çalışmaların ortodoks iktisat öğretisinin mekanistik ve deterministik varsayımlarına bağlılığından dolayı teknolojik olguların karmaşık yapısını çözümlemedeki yetersizlikleri göz önüne alındığında, teknolojiye kurumsal bakış açısı bir zorunluluk olarak ortaya çıkmaktadır. Dolayısıyla, bugün Veblen ve Schumpeter'in teknolojiye ilişkin görüşleri evrimci ve kurumsalcı iktisatçılar tarafından teknik, felsefi, sosyolojik ve metodolojik çalışmalarda alternatif bir yaklaşım oluşturmak için ağırlıklı olarak kullanılmaktadır. Bu bağlamda, Veblen ve Schumpeter'in karşılaştırmalı bir analizine dayalı bu tez, bilim ve teknoloji

politikası alıřmaları iin alternatif bir kavramsal ereve oluřturmak amacını güder.

Anahtar Kelimeler: Teknoloji, Veblen, Schumpeter, Kurumsal İktisat

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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CHAPTER 1

INTRODUCTION

Towards the end of the eighteenth century, with the maturation of technical foundations of the British industrialization which had been built into two hundred years of continuous technical improvements, economic growth and social transformation in the western nations speeded up. The then new technical possibilities that came into being through unremitting variations on the technical hallmark of the course—steam engine—paved the way to modern industrial capitalism by transition from small-scale manufacturing system to big factory system. Improvements in technology and industrial system cultivated the seeds of an unprecedented era. During the nineteenth century the accelerated technical advance had profound effects upon the economic and social realm. As such, the modern order laid in factory system and advanced industrial technologies not only opened up new directions in social sciences but also created the conceptual foundations of modern economic thought.

The earliest classical economists, particularly, Adam Smith and David Ricardo, and then, the critical political economist, Karl Marx treated technology, for the most part, under the name of capital or machinery within the context of the thorny issues of political economy among which the problem of distribution was predominant. Smith was the first economist to pay attention to the

significance of technological phenomena in specific economic terms. In his *The Wealth of Nations* (1937 [1776]) that is built upon the then observable social and economic facts and is accepted largely as the first text of modern economic thought, Smith set forth that technical improvements proceed upon division of labour within the large-scale manufacturing industries. In his words, “the greatest improvement in the productive powers of labour, and the greater part of the skill, dexterity, and judgment with which it is anywhere directed, or applied, seem to have been the effects of the division of labour” (Smith 1937 [1776]: 3). He adds that the division of labour and therefore technical advance “[is limited by the extent of the market]” (1937 [1776]: 17). Contra Schumpeter who emphasized the supply-side of technical progress, of which more will be made explicit later, Smith contemplated technological advance to be dependent upon the market demand. At this stage, it should be noted that in economic literature, ever since the classical economists, whether technological improvements are contingent upon supply side or demand side in the market has remained one of the highly contentious issues.

Ricardo made significant room for technology in his *On the Principles of Political Economy and Taxation* (2001 [1821]), first published in 1817. In the third edition of the book Ricardo added a new¹ chapter ‘on machinery’ in order to

¹ In this new chapter Ricardo changed his mind germane to his fundamental hypothesis on capital (machinery)-labour relation that he presented in the previous editions of the book. It is claimed that while in the earlier versions Ricardo thought of machinery to be beneficial for the public, in the new chapter ‘on machinery’ he set forth that machinery would be harmful to the working class due to the fact that new machinery creates technological unemployment. For some this assumes a clear-cut distinction as to his hypothesis that relied on *Say’s law*, or equivalently, the assumption of full employment. However, in this new chapter Ricardo treated the impacts of technology over different classes, that is, the interests of workers and capitalists, rather than on the whole society. For more detailed discussions see Barkai (1986), Beach (1971), Blaug (1958), Clair (1965), Davis

explore the influence of machinery upon the different classes of the public. More specifically, he was engaged with revealing machine (capital) and labour relations around labour wage.

Marx focused on technology related to labour process yet, as is well known, with an approach at odds. In the fifteenth chapter of *Capital I* (1967 [1867]), ‘machinery and modern industry’, Marx scrutinized the effects of machine technology upon the labourers within the process of the ‘production of relative-surplus value’. Marx made a point of the capitalist usage of machine technology that serves to the pecuniary aims of capitalist class. As such, Marx considered machine technology to be “a means for producing surplus-value” (Marx 1967 [1867]: 371). At this point it will be appropriate to give the definition of technology of Marx that is actually close to that of Veblen. Resembling Veblen, Marx thought of the substance of technology as a means of the community’s acquiring livelihood and as a part of organization of social relations that shapes the line of reasoning of the community: “Technology discloses man’s mode of dealing with Nature, the process of production by which he sustains his life, and thereby also lays bare the mode of formation of his social relations, and of the mental conceptions that flow from them” (1967 [1867]: 372n).

Let us for a moment skip chronological order to overview the place of technology in the recent economic literature. After the World War II, with the proliferation of economic growth and developmental problems of the post-war

(1989), Femminis and Salanti (1995), Hollander (1971), Maital and Haswell (1977), Morishima (1989), Wicksell (1981).

world, neoclassical economists gradually began to study the sources of economic growth and therefore technological change on the basis of a standard neoclassical production function. This neoclassical literature on technology began with Robert Solow's paper on economic growth published in 1956, 'A Contribution to the Theory of Growth'. In it he presented a mathematical growth model that is a version of the Harrod-Domar model. Solow followed shortly after with another pioneering article, 'Technical Change and the Aggregate Production Function' (1957). Before that article, neoclassical economists believed that the main causes of economic growth stemmed from increases in capital and labour. In juxtaposition, Solow (1957), by using US data from 1909 to 1949, observed a gap between the growth rate of national income of US and of the inputs of labour and capital. In other words, he *discovered* another *variable* that augments the national income of US apart from the contributions of labour and capital. He attributed this unaccounted portion of economic growth—now called the 'Solow residual'—to *technological innovation*. Despite the fact that technological advance is regarded as one of the substantial sources in economic growth in Solow's model, it is considered to be a residual and an exogenous variable. How it comes about remains unexplained. In this sense, in Solow's growth model technology is taken as a *mana from heaven*, as it were, and as such, at times Solow residual is called 'a measure of our ignorance' and 'ignorance coefficient' satirically.² For approximately thirty years technology in neoclassical growth theory remained as a 'black box' (Rosenberg 1982; 1994) without knowing what

² For detailed textbook explanations and empirical studies concerning Solow's neoclassical growth model see Barro (1999), Barro and Sala-i Martin (1995), Boskin and Lau (1992), Hall and Jones (1999), Mankiw (1995), Mankiw *et al.* (1992), Romer (1996).

was in it. Towards the end of 1980s, in the economic literature, an alternative to neoclassical growth theory, first developed by American economist Paul Romer, emerged as an attempt to *discover* the 'black box'. This is now known as endogenous growth theory.

Romer in his famous paper published in 1986, 'Increasing Returns and Long-Run Growth', and subsequently in 'Endogenous Technical Change' (1990), and 'The Origins of Endogenous Growth' (1994) developed a new approach against the inadequacy of neoclassical growth model in explaining the origin of technical advance. In contradistinction to conceptualization of capital as composed of only physical capital in Solow's model, Romer in his endogenous growth model contemplated capital to consist of not only tangible capital goods but also *human capital* embodied in knowledge and dexterity of labour acquired in the process of either learning-by-doing or by formal education. This model takes for granted all assumptions of neoclassical growth model but assumes away its main assumption, decreasing returns to capital. According to this fundamental tenet, neoclassical growth theories before endogenous growth theory claim that after a certain level of capital, increase in capital leads to increase in output decreasingly and after a certain point it has no effect upon the amount of output. On the other hand, endogenous growth theory assumes increasing returns, that is, each unit of capital leads to more unit of output; since with new capital goods agents gain access to new information and knowledge, and as such, using new tangible capital not only augments the physical capital stock but also human

capital and therefore technology. In short, in this theory human capital is seen as the main source of technological advance.

Much as neoclassical growth theories, from Alfred Marshall to Robert Solow, implied the importance of innovations and technological development, they remain far from displaying a realistic analysis of innovations and technological process due to their commitment to the hard-core postulations of orthodox economic theory. Among them, rational economic behavior assumption that assumes individuals as acting to maximize their preference functions and the static character of the models they developed are the salient obstacles to a realistic and holistic theory of technological process. However, although endogenous growth theory treats technology in a dynamic general equilibrium context, due to its equilibrium approach as well as mechanistic and deterministic postulations that are a holdover of the previous static neoclassical growth theories, it too is far from presenting a matter-of-fact analysis of technological process and from explaining what is ‘inside the black box’ (Rosenberg 1982), that is, the sources of technological advance and the incentives of innovator firms’ behaviors oriented towards creating new technical possibilities in the market.³ When endogenous growth theory arose in the 1980s, in the literature of economics of technical change another theory began to appear as would constitute an alternative to the former theories on the basis of institutionalist and evolutionary premises that can be traced back to Veblen’s but predominantly

³ Dosi (1997) summarizes the findings related to the ingredients of the ‘black box’ that have appeared in surveys on technology so far as ‘first, innovative *opportunities* . . . secondly, *incentives* to exploit those opportunities themselves . . . thirdly, the *capabilities* of the agents to achieve whatever they try to do . . . fourthly, the *organizational arrangements* and *mechanisms* through which technological advances are searched for and implemented” (1997: 15 32).

Schumpeter's approaches to technology and economics traceable to Jean Lamarck (1744-1829) and Charles Darwin (1809-1882).

Over the last thirty years, heterodox economists and economic historians, by using evolutionary concepts, have produced an account of technological phenomena different from that of neoclassical growth theories. Also, in this new evolutionary and institutionalist wave a great number of economists have begun to resurrect the Schumpeterian agenda concerning technological change and, particularly, innovation process. Richard R. Nelson and Sidney G. Winter are the most representative figures in the neo-Schumpeterian economic approaches to technology. The evolutionary theory of economic growth and change developed by Nelson and Winter was built upon in the main Schumpeter's central concepts of innovation, imitation and invention as well as his institutional and descriptive approach. The seminal work by Nelson and Winter in the modern evolutionary thinking in economics, published in 1982, *An Evolutionary Theory of Economic Change*, is the pioneer of evolutionary growth theories. Before that book, Nelson and Winter in 'Neoclassical vs. Evolutionary Theories of Economic Growth: Critique and Prospects', in 1974, and together with Herbert L. Schuette in 'Technical Change in an Evolutionary Model', in 1976, began to create the fundamental concepts and precepts of institutionalist and evolutionary approaches to technical change and economic growth. Nelson and Winter, as well as their followers and partners are engaged in building a general theory of evolution of social theory through which they explore the nature of innovation process and the question of how innovations lead to new capabilities. Much of contemporary

works in evolutionary and institutional economics of development and of technical change take their departure points from the book in question. Thus, a growing literature on institutional and evolutionary economics based upon Schumpeter's and Veblen's perspectives has started building up recently (*e.g.*, Dosi *et al.* 1988; Dosi and Nelson 1994; Dosi 1997; Hodgson 1988; Hodgson 1993; Nelson 1995; Magnusson 1998).

Like Veblen and Schumpeter, the evolutionary theory of technical change considers capitalism, economic and technological process as a dynamic process. It is, first of all, opposed to "aggregation, maximization and equilibrium" concepts of neoclassical growth theory germane to technological process, since, according to this new evolutionary theory, technological process "depends on a complex of environmental considerations that differs sharply from sector to sector, country to country, and period to period" (Nelson and Winter 1974: 903). Accordingly, due to the fact that there is a number of different components of technological process and also individuals and events contingent on agents' deeds are of heterogeneous nature, their treatment of technology is on a micro basis. Their departure point is the opinion that there are different technological processes, trajectories and paradigms. In short, "diversity and change" (1974: 903) are the central phenomena or concepts of technological process and therefore, according to the theory, the large-scale macroeconomic models of neoclassical growth theories, be it Solow's or Romer's, cannot handle technological phenomena in the appropriate sense. Nelson and Winter (1982) state that "[t]he neoclassical approach to growth theory has taken us down a

smooth road to a dead end” (1982: 205). Relatedly, because firms are not alike in economy and each of them has different choice set for maximization of profit as well as for their other goals, Nelson and Winter deal with technological and economic change at the level of individual firm. More significantly, within this dynamic and micro setting, uncertainty facing firms that aim at making innovations manifests itself as an economic reality. Thus, in contradistinction to neoclassical growth theories, firms do not constantly make decision with the intention of maximizing their profits. According to Nelson and Winter innovator firms in the main follow their ‘routinized’ strategies and decision rules concerning their innovative activities and decisions due to uncertainty. Therefore, firms’ main object is not always to gain maximum profit but can be safeguarding their existent position without a motive of maximizing their profits. Moreover, due to uncertainty with respect to innovative activities of firms, Nelson and Winter assume away the equilibrium analysis of neoclassical theory. For them, technological process assumes a complex structure each part of which cannot be known for certain by innovator economic agents or firms owing to the fact that they cannot acquire perfect and costless information as assumed in neoclassical theory. For that reason, evolutionary theory of technical change, above all, must be concerned with “complex pattern of routinized behaviors” (Nelson *et al.* 1976: 94) of individualized firm, which do not have a tendency to an equilibrium point necessarily that neoclassical economists posits. As such, models constituted on evolutionary theory prove to be behavioralistic and descriptive analyses that rest upon simulation techniques.

Although this new wave of evolutionary theory accumulating since the 1980s is named as the neo-Schumpeterian approach, Hodgson (1994) claims that this new wave developed by Nelson and Winter is closer to Veblenian and old institutionalist tradition than to Schumpeter. Because Nelson and Winter make use of Veblenian notions such as cultural lag, friction, or in Veblen's words, "imbecile institutions" (Veblen 1946 [1914]: 25) that point out gradual change in institutional order to their evolutionary theory of firm. As emphasized above, Nelson and Winter and their followers put strong emphasis on "bounded rationality" (Dosi 1997: 1531) in 'routinized' path of innovator firms. This is, in effect, reminiscent of Veblenian approach to the process of technological and institutional change. However, needless to say, Schumpeter's bequest in the new wave is more explicit. Here, it will be more appropriate to suggest that both Veblen and Schumpeter have strong parallels with, if not weighty influence upon, new evolutionary theory of economic and technological change. It should be noted that while contemporary studies on technology in technical sense in this new evolutionary theory take off from Schumpeter, they use Veblen's perspective in criticizing the neoclassical firm theory and in sociological, methodological and philosophical investigations concerning technological and institutional change. Although Veblen's viewpoint related to technology seems to have been neglected by this new evolutionary theory, in effect, his legacy has always remained behind their descriptive and institutionalist analyses as much as that of Schumpeter.

This thesis aims at demonstrating the significance of two alternative approaches developed by Veblen and Schumpeter to technology underlying

recent institutionalist and evolutionary stances and developing the solid foundations of an institutionalist approach to technology. This comparative analysis based upon their congruent and conflicting arguments about technological process in advanced capitalism presents us a general review of an institutionalist approach to technological phenomena. At this point, we must denote that thematically, this thesis develops on theoretical considerations of Veblen and Schumpeter with respect to technology, and as such, does not aim at sketching a historical approach to technology. Instead, by taking Schumpeter and Veblen as a departure point, we will engage with presenting an institutionalist approach to technology theoretically.

To that end, first of all, we will define their fundamental ideas and concepts. As such, in the second chapter we will handle Veblen's theory of social change in which technology proves to be the driving force. In this chapter, after examining key concepts of his theory of social change around technology, we will focus on his views about the role of technology in business/finance capitalism and dynamics of capitalism that shape the evolution of modern social order. By the same token, the third chapter will be devoted to Schumpeter's basic vision and concepts. This chapter tends to probe three essential elements of capitalist motion in Schumpeter's scheme; 'innovation', 'entrepreneur', and 'credit'. Then, in Schumpeter's setup, the significant function of technological process in the evolution of capitalism will be treated. The fourth chapter is concerned with revealing Veblen's and Schumpeter's views in a comparative way. This chapter is in the main built upon the key instruments of technological

process in Schumpeter's work and they will be examined in comparison with Veblen's thoughts on the same matters. In this chapter, we will make a comparison around their views on rationality, which links with their fundamental theoretical ideas. Finally, in the fifth chapter, under the light of their standpoints to technological process some general concluding remarks will be made. This final chapter presents us not only their disagreement about the characterization of technology and the process of technical advance, but also provides with a conceptual framework for technological process in two types of capitalist accumulation processes that can be used to reconcile the two approaches in a meaningful way.

CHAPTER 2

VEBLEN'S APPROACH TO TECHNOLOGY

Technology is central to Veblen's social and economic theory. Veblen examines technological phenomena and their far-reaching consequences on social and economic life from a heterodox point of view. To that end, he begins with forming a novel viewpoint. Rejecting the metaphysical assumptions and fixed logical deductions of the orthodox theory, he makes a point of building up a theory of social change in which technology provides an inner dynamics. Around it a range of social sciences is blended in order to present a 'realistic' economic and social theory. As such, by breaking off the strict boundaries of social sciences and, thereby, opening up a new scientific standpoint, he constitutes a multi-disciplinary approach to technological, economic and social phenomena.

Much of Veblen's writings are primarily the *exposé* of technological foundations of the evolution of institutional order. In order to present a clear-cut theory of technological life process, he scrutinizes the entire span of history of "technical insight" (Veblen 1964a [1923]: 272) from the Neolithic Era to the modern times. Since his endeavor to grasp technological phenomena embraces an extensive historical period and has to do with a wide sphere of human life within each period, Veblen's works on technology bear importance in terms of

understanding the cultural, social, economic and political evolution of history, as well as the current time and, especially, the future.

In the first section of this chapter we will focus on the basic features of Veblen's scientific view and his fundamental conceptions in his social theory. Then, we will look at his characterization of technology and the place of technology in his theory of social change. The third section is assigned to two country experiments of exceptional importance concerning the theory of social change Veblen developed. Next, we will re-define technology as a system of belief and knowledge. The fifth section will be reserved for 'two prime movers', technology and business, in the modern era. Then, we will discuss Veblen's views about the evolution of capitalism by considering his theory of social change. Finally, we will summarize Veblen's vision by means of a graphical demonstration.

2.1. Conceptual Foundations

Veblen's social theory deals with the evolutionary change of economic and social institutions in the process of "cumulative causation" (Veblen 1898). By scrutinizing process of social change in terms of 'cumulative causation', he makes an earnest effort to find out the dynamic factors of institutional change. He begins his analysis by criticizing classical economic theory in which the institutional scheme is considered to be fixed in a competitive system. Owing to the fact that the social process is a *continually* changing evolutionary process, the theory of economic life embodied in social order cannot be developed as will be

convenient with the reality of historical process based upon the “sequence of events” (Veblen 1898) by using the unrealistic postulations of classical economy. Hence, Veblen is severely critical of classical economic theory and its subsequent tradition, marginal utility school, due to their ahistorical, unrealistic, teleological or animistic, and taxonomic features (Veblen 1898; Veblen 1909; Davis 1945). At this point it should be noted that economists of marginal utility doctrine, particularly Marshall, using the evolutionary concepts, conceive the significance of the role of institutional changes in shaping economic life as different from the classical economists.⁴ Yet, since marginal utility economists’ approaches proceed on static nature and metaphysical basis of the old tradition, namely, hedonistic and natural rights philosophy, and do not consider the institutional elements in economic analysis, they cannot develop an evolutionary and realistic explanation of the economic and social change.

Veblen is engaged in an effort to build up an economic theory that is to reveal the nature and dynamics of never-ceasing change of institutional order. According to him, the evolutionary change of institutional order has “no final term” (Veblen 1961b [1919]: 37). For this very reason, he develops his economic theory around the precepts of post-Darwinian evolutionary science. For Veblen, “[a]ny evolutionary science is theory of a process, of an unfolding sequence” (1898: 375). Insofar as economic theory is constituted from the evolutionary point of view, it is classified as a modern science. That is, all economic phenomena must be treated in terms of ‘cumulative causation’ by avoiding

⁴ By classical economists we mean A. Smith (1723-1790), D. Ricardo (1722-1823), T. R. Malthus (1766-1834), J.B. Say (1767-1832), N. W. Senior (1790-1864), and J. S. Mill (1806-1873).

unrealistic, animistic and taxonomic explanations. He writes, “[e]conomic action must be the subject-matter of the science if the science is to fall into line as an evolutionary science” (1898: 388).

Veblen, rejecting the metaphysical and canonical organon of conventional economic theory *in toto*, develops a theory of instinctivist psychology of social behavior and an institutional analysis of social change. By so doing, with his own theory of instinctivist psychology he aims at revealing what conditions human activity. Also, by describing the origins of human behavior, but especially economic behavior, he is intent on attesting that individual is not a passive and hedonistic agent but an active element in social and economic realm. According to him, “the hedonistic man is not a prime mover” (1898: 390). By the same token, in contradistinction to the static nature of traditional economic theory, he builds up an institutional analysis of social change in order to present a realistic economic theory. At this point, it should be noted that generally speaking, Veblen is claimed not to have developed a system of thought but rather a general theory instead of a unified theory. For instance Dowd (1958) sets forth that Veblen is a “great generalizer” (1958: 284), not an economic or a social theorist. This opinion, if not entirely true, stems from Veblen’s grave interest in various social sciences such as anthropology, psychology, biology, sociology apart from economic science to present a wide-ranging economic theory, namely, a holistic approach to everyday economic behavior. Though much of Veblen’s writings reside, for the most part, outside the scope of standard economic theory, this does not mean that they do not constitute an economic theory. Homan (1968) overtly

puts Veblen's aim as follows: "His plan is a genetic study of economic institutions, evolutionary in character and essential to a proper understanding of the economic life of our times" (1968: 134). This much is certain that the theory of institutional economics Veblen developed is not only a critique of orthodox economic theory but also an "alternative" (Özveren 1998) to it. Four characters that are at variance with the tenets of classical and neoclassical economics define Veblen's evolutionary institutional economics. Firstly, he deals with the question of "realism" in economic theory. Secondly, he makes a point of showing the economic life as "a processual paradigm". Thirdly, he emphasizes a "holistic perception" of the economic life as a part of sociocultural system. Fourthly, institutionalism is "instrumentalist" in terms of values (Özveren 1998: 504 -505).

In Veblen's estimation, social and economic change amount to change in institutional order that refers to material framework of the community. Material framework is the outgrowth of the "ways of doing and thinking" (Veblen 1946 [1914]: 7) of the community that make up the pattern of livelihood. In this sense, he makes an effort to reveal which dynamic factors change the material framework and, therefore, the institutional order. According to him, the outstanding dynamic factor of change is technical action of human beings. At bottom, in Veblen's system, the endeavors of men to create a new material life emerge out of the attempts to improve the material welfare of the community by means of technological knowledge. As such, at the outset Veblen explores the origin of this technical action oriented towards creating a new material milieu, which results in a change in institutional order.

Veblen sees instinct, habit, institution and technology as the forefront factors of change. He considers instincts, “innate propensities of human nature” (1946 [1914]: 2), to have a major role in shaping human actions. According to him, instincts “are the prime movers in human behavior” (1946 [1914]: 1). Much as individuals are endowed by various instincts each of which assumes a different propensity from the rest, he deals with only three instincts that determine economic activities oriented towards realizing material interests. These are ‘the instinct of workmanship’, ‘the parental bent’, and ‘the idle curiosity’. These three proclivities are ‘peaceable’ innate propensities that tend to improve the material conditions fairly and collectively. Also, there are ‘predatory’ instincts that tend to hinder this progression and preserve the *status quo*. The chief ‘peaceable’ instinct among all, according to Veblen, is the instinct of workmanship (1946 [1914]: 25). This instinct deals with human trait of doing things efficiently by leaving no room for waste or useless living, but with an eye to providing the high productivity and maximum production that require continuous technological progress. The instinct of workmanship therefore manifests itself as the natural propensity of man oriented towards realizing technological progress. Secondly, the parental bent that has much in common with the instinct of workmanship in regard to fulfilling the ultimate ends indicates the human beings’ sense of unselfishness (*altruism*) as well as their nature of solicitude for the welfare of the race. Thirdly, the bent of idle curiosity can be interpreted as a desire for rational knowledge that does not involve utilitarian goals. It is the engine of technological knowledge as well as scientific knowledge to interpret the world and its facts. Consequently, all these instincts Veblen speaks of are the innate propensities of

human nature that enable man to master nature and to gain advances in productivity.

At this stage, two vital points must be mentioned. Firstly, technical and economic action is not governed solely or directly by instincts described above. For Veblen, along with these instincts intelligence assumes a chief role in shaping human behavior (1946 [1914]: 6). To these must be added also surrounding environmental conditions. All in all, these factors are in a reciprocal relationship. However, in the final analysis, as far as Veblen is concerned, the economic activities of man are governed directly by ‘institutions’. Secondly, related to the former, Veblen’s analysis of institutional change does not consist of instinctive theory alone. That is to say, instinct, in Veblen’s system, is not the only factor that shapes the institutional structure and social behavior. Instead, his instinctive theory, as Rutherford (1998) argues correctly, is just “a starting point for the cumulative evolution of habits and institutions” (1998: 466). At bottom, Veblen’s usage of instincts is not in the biological sense, but much more historical, cultural and anthropological oriented. To put it differently, as Hodgson (1994) affirms, “habits of thought are founded not simply on biological instincts but on human culture and habitual action” (1994: 22). In Veblen’s system, the patterns of social behavior and organization, not being exclusively the result of innate propensities of human nature or instincts, are in fact shaped through the multiple interplay of social conventions (institutions), traditions, instincts, technology, surrounding conditions, intelligence and experience (Anderson 1933: 603; Rutherford 1984: 332; Stabile 1987: 36). However, behavioral changes are very slow-moving and

therefore seem constant. In this sense only, social behavior can be said to be instinctive.

In Veblen's scheme, while men are engaged with realizing their material interests through technological knowledge, at the same time they generate the pattern of livelihood, the way of living and, of much greater significance, shape their frame of mind. That is, in the last resort, they determine how they think and the way of perceiving the facts of the world as a result of technical action. Veblen calls this world-outlook resulting from technological means that eventually become customary 'habits of thoughts'. Habits of thought thus are conditioned by the prevailing material conditions, and once becoming established and patterned over time, they are institutionalized. Incidentally, institutions in Veblen's system refer to social conventions, prescriptive forces and authority that shape and limit the activities of individuals that come from the past social experiences. Therefore, in Veblen's scheme, 'institutions are an outgrowth of habit' (Veblen 1909: 628) and '[t]he change is always in the last resort a change in the habits of thought' (1898: 392) as a result of technological change.

2.2. Technology and Social Change

Technology, in Veblen's opinion, is more than tools and mechanical appliances. Veblen defines 'the state of the industrial arts', namely, technology, as 'the community's joint stock of technological knowledge' (1964b [1919]: 56). Therefore, technology consists of technique that is social in character and the common stock of technological knowledge of the community other than

mechanical arts. To Veblen, technology, being a common possession, is a cultural inheritance of the community deriving from the past social experiences. In other words, technology, referring to an aspect of culture (Lower 1987: 1148; Junker 1968: 204), is a social aspect of the development of humanity. In this sense, technology in Veblen's system can be understood best only if it is recognized within its social context. Veblen writes as follows:

Technological knowledge is of the nature of a common stock, held and carried forward collectively . . . The state of the industrial arts is a fact of group life, not of individual or private initiative or innovation. It is an affair of the collectivity, not a creative achievement of individuals working self-sufficiently in severalty or in isolation. In the main, the state of the industrial arts is always a heritage out of the past; it is always in process of change, perhaps, but the substantial body of it is knowledge that has come down from earlier generations. New elements of insight and proficiency are continually being added and worked into this common stock by the experience and initiative of the current generation, but such novel elements are always and everywhere slight and inconsequential in comparison with the body of technology that has been carried over from the past (Veblen 1946 [1914]: 103).

Technology in Veblen's social theory is not an exogenous phenomenon but an inner dynamic factor as a result of men's social and collective activities oriented towards realizing their material interests. However, in orthodox parlance, technology is considered to be a gift of nature. This opinion stems from its passive and hedonistic conceptualization of human nature. To Veblen, in orthodox theory, "[t]he material circumstances which condition men's life fall within the scope of this natural order of universe, and as members of the universal scheme of things men fall under the constraining guidance of the laws

of Nature, who does all things well” (1901: 191). In opposition, Veblen considers all factors used in process of the reproduction of man himself to be “a question of technical insight” (1964a [1923]: 272). Indeed, by ‘technical insight’ he implies tool-making man, namely, *homo faber*.⁵ This ‘technical insight’ inherent to human nature is a means for him in the process of touching and transforming nature and its resources. Men, by using the resources of nature, enter into an attempt of technical action. The crux of the issue here lies in recognizing that resources in nature do not initiate the technical action. The other way round, resources in nature function as resources in the hands of man in the process of technical action. In this sense, as Junker (1968) states, the usage of the term ‘natural resources’ in orthodox theory is definitely wrong. He overtly asserts that “[o]nly ‘stuffs’ are natural, meaning by stuffs things that are involved in no pattern of resource use” (Junker 1968: 204).

In Veblen’s scheme, changes in the material circumstances as a result of change in the state of the industrial arts set afoot a new habituation. It follows that the new order forms a new pattern or system of knowledge and belief, namely, the modern habit of thought. This latest social habit of thought eventually “takes on an institutional character and force” (Veblen 1946 [1914]: 7) and will resist to changes in the institutional order that it has created itself. Habits of thought peculiar to an institutional order in any place and time represent established rules, nature of canons, use and wonts that are prescribed by the present social authority, the legitimacy of which lies in the unquestionable conventional or

⁵ This is the very same thing that Gordon Childe (1951) calls ‘man makes himself’. In other words, Veblen replaces the passive-hedonistic agent in classical theory with man making himself as an active agent in nature.

ceremonial social facts. Therefore, Veblen's social theory of change deals primarily with explaining the question of which social factors force the habits, the scheme of authoritative use and wont, law and custom to change, resulting in the constitution of the following new institutional order.

Technology appears as the driving force of change in his social theory. He writes, “[a]ll economic change is a change in the economic community,—a change in the community's methods of turning material things to account.” (1898: 392). This unequivocal statement, in effect, reflects a synopsis of the quintessence of the theory of change sketched by Veblen. The last part of this statement implies change in the state of the industrial arts, namely, technology. Elsewhere he writes in the same manner: “A new order of things has been taking effect in the state of the industrial arts [technology] and in the material sciences that lie nearest to that tangible body of experience out of which the state of the industrial arts is framed” (1964b [1919]: 37).

Therefore, Veblen builds up his social theory around the dichotomy of technological (instrumentalist) and institutional (ceremonial) behaviors. While the former is constantly engaged with creating new material conditions by eliminating the outmoded habits of thought, the latter tries to preserve the existent situation. And yet, the tear and wear of the existing institutional and cultural order is inevitable where changes in the state of the industrial arts take place. Veblen explains transmission from the era of handicraft to the era of machine process on this ground:

[A] new technology, with its inculcation of new habits of thought, new preconceptions, gradually made its way among the remnants of the old, altering them, blending with them, and little by little superseding them. The new technological departure . . . in the technological ascendancy of the machine-process brought a new and characteristic discipline into the cultural situation. (Veblen 1961b [1919]: 53-54).

The dichotomy of ceremonial and instrumentalist behavior can be understood best by considering epistemological foundation of this dualism. Instrumentalist knowledge and ceremonial knowledge are diametrically opposed to each other. Dugger and Waller (1996) explicitly set forth the epistemological level of the instrumental-ceremonial dualism:

Instrumental knowledge has to do with getting things done, with solving problems . . . Where instrumental knowledge has to do with getting things done, ceremonial knowledge has to do with the credit for getting things done . . . Where instrumental knowledge has to do with solving problems, ceremonial knowledge has to do with exercising power. Where instrumental knowledge has to do with matters of fact, ceremonial knowledge has to do with matters of prestige. In human history, ceremonial knowledge generally triumphs over instrumental knowledge (Dugger and Waller 1996: 171).

Over the course of the 'main drift', instrumentalist knowledge that is engaged with seeking new solutions to problems has met resistance from ceremonial knowledge. At this stage, to pass to the ontological level of dichotomy of technology and institution, once considered the contemporary social order, instrumentalist knowledge-behavior corresponds to the matter-of-fact knowledge of technology of machine industry in the hands of industrial classes whereas ceremonial knowledge-behavior that holds out against the former

represents pecuniary interests of the businessmen that serves to uphold their *status quo*. This point is the crux of what Veblen is at pains to display systematically throughout his work by way of his social theory.

There has arisen a controversy in the literature concerning the dichotomy of technology and institution recently. Technology manifests in Veblen's system a revolutionary power that is to eventually upset the atavistic institutional 'base'. As such, generally speaking, technology in Veblen's system is regarded as having a dynamic and revolutionary character whereas institutions are considered to have a static character and to be resistant to changes brought about by technological change. For instance, Ayres (1944) suggests that institutions are mostly "static, resistant to and inhibitory of change" (1944: 174). Correspondingly, Walker (1977) is of the opinion that "[i]nstitutions are static and resist change" (1977: 220) and technology is the only one dynamic phenomenon that leads to new institutional order. This opinion is not entirely true for Veblen's system. As Tilman (1993) observes correctly, recent interpretations of institutional change deal with the dialectical interplay between technology and institutions. For instance, Rutherford (1984) argues that there is not a unilateral relationship between technology and institutions in Veblen's system as is usually accepted; instead, there exists a reciprocal relationship as each element influences the other. In Rutherford's words, for Veblen, "[t]echnology is an endogenous factor . . . [and] the causal link between institutions and technology run in both directions" (1984: 338). Rutherford goes so far as to say that "it cannot be said that he [Veblen] *consistently* argues that new technology will necessarily lead to a

change of institutional base” (1984: 342). Veblen, as Rutherford (1984) indicates, is well aware of that although technological advance brings about a grave pressure upon the institutional ‘base’ to change, it does not amount that it will achieve a success over existent institutional order. According to Veblen, institutions can adjust themselves to new material milieu through technological change without the actual undermining of the ‘base’. What is more, institutions, to Veblen, can absorb the new habits of thought as a result of new technological means in such a way congruent with its scheme. Therefore, technology that is of iconoclastic nature cannot change the institutional order continually. Given this fact, it is all the clearer why Veblen does not use the term ‘progress’ but ‘cumulative causation’. The institutions that hold out against change can thwart ‘progress’ or ‘progression’. Veblen calls these institutions ‘the imbecile institutions’.

[H]istory records more frequent and more spectacular instances of the triumph of imbecile institutions over life and culture than of peoples who have by force of instinctive insight saved themselves alive out of a desperately precarious institutional situation (Veblen 1946 [1914]: 25).

To put it differently, in Veblen’s estimation, change in institutional order happens gradually and with a delay. To put it in the currently fashionable phrases, there turns out to be always a ‘cultural lag’, ‘friction’, ‘dysfunction’ or even ‘path dependency’ on the way of change. To Veblen, this stems from that

the growth of custom follows after the facts of experience which give rise to it . . . In this sense, therefore, any established order of law and custom is always out of date,

in some degree. The code of right and honest living is always *in arrears*, by more or less; more so in the case of any people for whom the material conditions of life are in rapid process of change (Veblen 1964a [1923]: 18, emphasis added).

Last but not least, Veblen's theory of social change should be examined by considering the differences between *short-run* and *long-run* effects of technological change.⁶ The process sketched above under the heading of 'cultural lag' or 'the imbecile institutions' stands for only the short run effects of technology. That is, in the short run a friction can occur, nonetheless, in Veblen's system, in the long run, change in institutional 'base' is inevitable because of the iconoclastic nature of technology. As will be made explicit in the last section of this chapter, in Veblen's scheme, the evolution of capitalism is determined by machine technology of industry in the long run.

⁶ Short run and long run in Veblen's system are quite different from in standard economics. In standard economics short run refers to a period of time in which it is possible for firms to adjust amount of output to be supplied by varying an input (labour) according to demand to some extent. Veblen, by short run, means an interval in which institutional change through technological change seems not to be possible. As for long run, in standard economics it amounts to a time period in which firms have limitless factor opportunities to augment or adjust their productions according to demand. On the other hand, long run in Veblen's estimation corresponds to a duration the end of which culminates in institutional change. It is hard to say how long short or long run takes. It can change case by case in Veblen's system and also in standard economics. They do not refer to definite times. However, long run in Veblen's system can be related to Fernand Braudel's '*longue durée*' that corresponds to one or two hundred years or else his 'geographical time' that is longer than the former which he defines in *The Mediterranean and the Mediterranean World in the Age of Philip II* (1976). Indeed, both display a critical historical approach. While Veblen sees historical events as proceeding cumulatively and as in a sequence without sharp breaking with the past, Braudel, with his historical approach, the long-run serial history of changes, like Veblen, objects to conventional 'narrative of events'. Their perceiving time and historical approaches are quite similar. However, in the last resort, Veblen, by long run, wants to imply incalculable future for institutional change.

2.3. Two Illustrations of the Main Argument: Imperial Germany and Imperial Japan

With the introducing of machine technology into the institutional order, the dynastic politic and traditional social facts happened to begin disappearing in the sphere of everyday life in England, resulting in the further predominance of industry and trade. With the advent of so-called Industrial Revolution, constitutional governments and natural rights first developed in England and then in continental Europe. Modern machine technology and modern materialistic sciences had the chief role in this. More specifically, in Veblen's emphatic opinion so iconoclastic is the modern technology that it destroys its own 'base' from which it had first arisen thereby reshaping the course of history. And yet, this was not true for Imperial Germany:

The position of the Germans is not precisely unique in this respect; in a degree the same general proposition will apply to the other Western nations, but it applies to none with anything like the same breadth. The case of Germany is unexampled among Western nations both as regards the abruptness, thoroughness and amplitude of its appropriation of this technology, and as regards the archaism of its cultural furniture at the date of this appropriation (Veblen 1994a [1915]: 86).

From 1870s onwards, Germany achieved a great technological advance and industrial efficiency by borrowing the technological elements from England. Veblen is engaged in explaining why German industrialization followed a different track from that of England in his *Imperial Germany and the Industrial Revolution* (1994a [1915]). The path of German industrialization was built up on

her predatory dynastic state structure and developed in accordance with her authoritarian institutional order that would culminate in the Nazi Germany. In juxtaposition, Industrial Revolution had come into scene from a more or less democratic institutional order in England that gave rise to a bourgeois democratic order.

Machine technology in Germany did not undermine her hierarchical-authoritarian, ceremonial and nationalistic social values or habits of thought (institutions). To put it differently, “[t]he German state displayed strong signs of continuity and an ability to modernize itself from within” (Özveren 2000: 161). Therefore, history recorded the German case as the triumph of ‘imbecile institutions’ over life and culture:

The result being that Germany offers what is by contrast with England an anomaly, in that it shows the working of the modern state of the industrial arts as worked out by the English, but without the characteristic range of institutions and convictions that have grown up among English-speaking peoples concomitantly with the growth of this modern state of the industrial arts. Germany combines the results of English experience in the development of modern technology with a state of the other arts of life more nearly equivalent to what prevailed in England before the modern industrial regime came on; so that the German people have been enabled to take up the technological heritage of the English without having paid for it in the habits of thought, the use and wont, induced in the English community by the experience involved in achieving it. Modern technology has come to the Germans ready-made, without the cultural consequences which its gradual development and continued use has entailed among the people whose experience initiated it and determined the course of its development (Veblen 1994a [1915]: 85-86).

The chief reason of not having appropriated the iconoclastic character of technology by Germany lies in that the habits of thought oriented towards perceiving the facts in terms of cause and effect did not develop in Germany as in England. This denotes that technological borrowing does not inculcate necessarily new and iconoclastic habits of thought that are in conflict with the older order and will replace the existing habitual thinking of the community immediately and directly. As such, since technological advance in England had emerged out of the long historical process of its socio-economic and political conditions that changed gradually and cumulatively, borrowing the technological elements from England without her cultural life did not allow Germany to realize the dynamic setting of industrialization in an institutional order as had occurred in England. This was because the historical context of Germany resided in a dynastic state that did not evolve so as to allow modern machine technology to develop the specific conditions as had come about in England.

As for Imperial Japan, Veblen comes to the same conclusion that he draws for Germany. In 'The Opportunity of Japan' (1964c [1915]) he examines the nature of Imperial Japan. According to him both countries have many things in common:

In a measure their case is paralleled by that of the German people, e.g., who have recently made an analogous but less immoderate and less precipitate move out of mediævalism into the modern system of industry and science; and in the like analogous way the German people . . . have allowed their new-found technological efficiency to be turned to the service of dynastic politics . . . And by the way, it should be something more than a blind historical accident when the Japanese committee of

bureaucrats have found it to their account to draw so largely as they have done from the example of German bureaucratic imperialism, both in their constitutional reorganization and in the excessively devious and irresponsible ways of their diplomacy (Veblen 1964c [1915]: 252-253).

In Japan as in Germany, after the Meiji Restoration industrialism grew rapidly. Japan made great achievements in technological advance under the auspices of her dynastic state structure by borrowing technological equipments from Western nations. However, the result was the same as in the case of Germany. That is, borrowing technology without its cultural life counterpart did not upset her system of autocratic dynasticism and, therefore, a new institutional order as had arisen in England did not emerge. The result is that Japanese people assimilated the borrowed technological knowledge and material sciences in a way congruent with their “spiritual” viewpoints and “sentimental” beliefs (1964c [1915]: 252). On the contrary, machine technology and material sciences had shaped the habits of thought of the English people as enabling them to think in terms of cause and effect. Therefore,

It is . . . only in respect of its material ways and means, its technological equipment and information, that the ‘New Japan’ differs from the old. That superficial reorganization and amelioration of its civil and political institutions that went into effect in the Restoration has not yet had time to remove the spiritual landmark of feudalism or appreciably to weaken the servile-aristocratic bias that still guides the intrigues of the court circle, the policies of state, and the larger maneuvers of diplomacy (Veblen 1964c [1915]: 251).

To go over the main points with which we are concerned, technology, in Veblen's scheme, referring to a historical and cultural phenomenon, reproduces itself in different trajectories within different historical and cultural conditions. In this sense, for Veblen, though technology is "value-laden" (Feenberg 1999: 9) in terms of creating new and different habits of thought and patterns of lives, it is at the same time "humanly controlled" (1999 :9), not "autonomous" (1999:9), and as such, gives birth to different consequences in different institutional, historical and cultural conditions. Given all, what is relevant here is to say that though technology seems to have a chief role in driving history forward in his analysis, his approach to technology is far from being technological determinist. Nor does it involve a technologically reductionist explanation of history. This point is very important for Veblen's theory since, as Tilman (1992) states "Veblen's conservative critics made the most extreme accusations of technological determinism against Veblen" (1992: 269).

Last but not least, it should be noted that Veblen's comments on the cases of *post*-industrialization Germany and *post*-Restoration Japan are based on a short run analysis in the sense that they include the period of 1870s-1910s. In Veblen's scheme, in the long run machine technology as different from the past technological trajectories is incompatible with the predatory dynastic state. In reality, as is seen clearly today, Germany, Great Britain, and Japan have come to the more or less same institutional order and habitual thinking. Bertrand Russell in his 'Machines and the Emotions', in *Skeptical Essays* (1928), denotes modern Japanese culture as follows:

Every normal boy loves machine; the bigger and more powerful they are, the more he loves them. Nations which have a long tradition of artistic excellence, like the Japanese, are captivated by Western mechanical methods as soon as they come across them, and long only to imitate us as quickly as possible. Nothing annoys an educated and traveled Asiatic so much as to hear praise of 'the wisdom of the East' or the traditional virtues of Asiatic civilization. He feels as a boy would feel who was told to play with dolls instead of toy automobiles. And like a boy, he would prefer a real automobile to a toy one, not realizing that it may run over him (Russell 1928: 80).

As a result, as far as Veblen is concerned, insofar as improvements in machine technology go on, such transcultural convergences will increase in the future so as to culminate eventually in the universal 'industrial republic'.

2.4. Machine Technology as Modern Point of View

Veblen, by considering the mutual relations between technology and institutions, imagines Western Civilization as composed of basically two eras that he calls the 'peaceful' era and the 'predatory' era, which correspond with his basic characterization of social classes. More specifically, he subdivides history of civilization into four stages that he calls the "savage era", the "barbarian era", the "handicraft era" and "the era of the machine process" (Veblen 1946 [1914]). The savage era corresponds to the peaceable cultural era and the latter three to predatory era. The transition from the peaceable era to the predatory era begins with the origins and prevailing of the institution of ownership and of private property. Therefore, in the predatory era, technology is not a common good of the community. Only a small portion of the community has free access to

technological knowledge. To Veblen, the full-blown stage of predatory era is the era of machine process.

The savage era during which technology is common and ownership does not occur begins in an undefined time in the Neolithic Era and embraces the whole span of that period. The barbarian era begins afterwards and includes the entire Middle Ages. Next, the handicraft period extends from Middle Ages to the late eighteenth century in England, and to the beginning of the nineteenth century in America and on the continent. Finally, the last period is the age of machine process we now live in. At this point, it should be noticed that these historical periods designated by Veblen are not demarcated sharply. That is, transition from one to next does not assume a clear-cut boundary between the periods. In this sense, Veblen, far from perceiving history from the discrete historicity point of view, recognizes these periods as overlapping with each other. In other words, as Edgell (1993) posits “Veblen did not subscribe to unilinear theory of evolution” (1993: 201).

Technological revolution in the means of production at the end of the handicraft period gave birth to the era of the machine process with its various conflicts between institutions of industry and business, which had never taken place so severely before. Central to Veblen’s considerations and predictions as regards the machine era is his theory of social change based upon the dichotomy between the instinct of workmanship (technology or industry) and predatory habits, that is, the institution of pecuniary affairs. In Veblen’s view, modern civilization is the era in which “[b]usiness enterprise and the machine process are

the two prime movers in modern culture” (Veblen 1958 [1904]: 178). In this sense, Veblen calls also the present age not only as “the age of machine process” but also as “the age of business enterprise” (1958 [1904]: 7).

According to Veblen what marks off the modern era from the older orders is not the changed arrangement of religious, political, or business conceptions but its machine technology that requires specific technical and scientific knowledge as to function with its far-reaching consequences (1958 [1904]: 144). It is this ‘state of industrial arts’ that makes up the modern point of view and contemporary habits of thought that challenge and eventually upset the sway of business enterprise. In *The Theory of Business Enterprise* (1958 [1904]) Veblen aims at constituting a theory of social change based upon the dichotomy of institutions of industry resting upon machine technology and business enterprise. In Veblen’s system, two different modern habits of thought emerge out of these institutions and their material milieus. That is, each institution, at the same time, represents two opposite points of view. To Veblen, these conflicting ‘habitual thoughts’ stem first and foremost from two conflicting types of employment in the sphere of industrial production.

With the advent of machine technology there has supervened a sharp demarcation between employments in the industrial system—on the one side, engineers, technicians, workmen engaged in ‘industrial employments’; on the other side, businessmen, the legal owners of the industrial plants, who have to do with mostly ‘pecuniary employments’. These two groups of people, having different habits of thought, have also different vested interests. To put it

differently, in Veblen's scheme of things, in the modern institutional order, the historical dichotomy between instrumental and ceremonial behaviors have turned into the conflict between these two occupations that are at variance with one another. Veblen defines them as follows:

Of the industrial employments, in the stricter sense, it may be said . . . that they begin and end outside the higgling of the market. Their proximate aim and effect is the shaping and guiding of material things and process. Broadly, they may be said to be primarily occupied with the phenomena of material serviceability, rather than with those of exchange value . . . The pecuniary employments [in opposition] have to do with in point of ownership, with market values, with transactions of exchange, purchase and sale, bargaining for the purpose of pecuniary gain. These employments make up the characteristic occupations of business men, and the gains of business are derived from successful endeavors of the pecuniary kind (Veblen 1901: 205, 218-219).

Veblen examines four cultural stages of western civilization within the context of their different material conditions as a result of different "technological paradigms" (Dosi 1982) and habits of thought inculcated by these material circumstances. It is obvious that Veblen's theory of social change rests upon the evolutionary materialistic conception of history in which, instincts, technology, habits and institution are the significant dynamic factors. However, as Heilbroner (1999) correctly states that "[w]hat fascinated him was the machine" (1999: 222). Heilbroner (1999) in the ensuing line summarizes the crux of the effects of the machine technology over the community as follows: "He saw society as dominated by the machine, caught up in its standardization, timed to its regular cycle of performance, geared to its insistence on accuracy and precision.

More than that, he envisioned the economic process itself as being basically mechanical in character” (1999: 222). Truly, for Veblen, the uniformity and standardizing character of the process of machine technology imposes its sense of mechanical regularity upon everyday life of the industrial workforce directly, and less directly on the rest of the populace in the course of time. However, though the habits of thought conditioned by the technological and scientific values fall upon the mechanical occupations at first hand, machine technology is such “a severe and insistent disciplinarian in point of intelligence” (Veblen 1958 [1904]: 147) that in the long run the underlying population cannot keep aloof from the common value system of machine technology. As will be made explicit later, the common technological and scientific value systems in the community are the salient factors in the evolution of capitalism. The industrial habits of thought, therefore, shape the social habits of thought of the community at large in accordance with the nature of machine technology that gives its tone to the material framework of modern civilization. He writes

[i]n the modern culture, industry, industrial process, and industrial products have gained upon humanity . . . [T]hey have become the chief force in shaping men’s daily life, and therefore the chief factor in shaping men’s habits of thought. Hence men have learned to think in the terms in which the technological processes act (Veblen 1961a [1919]: 17).

As a result, the industrial habits of thought imposed by the discipline of machine technology of industry urge the community to think and perceive the facts in terms of “material cause and effect” and “impersonal tangible performance” in a quantitative sense (Veblen 1958 [1904]). Elsewhere he speaks

of the logic of the machine technology of industry as “the logic of mechanical process in which no personal or teleological factors enter” (1946 [1914]: 303). Accordingly, Veblen states that “[t]he resulting framework is spoken of as Materialism” (1964b [1919]: 40). To Veblen, the apex of the evolution of the culture resides in this matter-of fact insight, that is, “an impersonal, dispassionate insight into the material facts with which mankind has to deal” (1961a [1919]: 1). This insight among the western peoples has ensued through modern science and improvements in technology of the machine industry out of which modern science has emerged.⁷ As things turn out, this kind of habitual thinking is at variance with habits conditioned by the institutions of intangible and immaterial phenomena, *e.g.*, pecuniary affairs of the business enterprise.

2.5. Technology Versus Business

Veblen’s dichotomy between business and industry can be traced back to the first stage of ‘barbarian’ eras and partly the ‘savage’ era. Namely, it is an ages-long conflict, but the tension of conflict in question has accelerated towards the end of nineteenth century. This tension resides in the domination of businessmen characterized by unfitness to technological phenomena in the sphere

⁷ The development of the modern evolutionary science that resides in the precepts of the post-Darwinian evolutionary science, according to Veblen, owes much to the achievements of the machine technology during the nineteenth century. In this sense, Veblen’s approach to the evolution of science falls upon the ‘externalist’ approach that defends that scientific thought develops through matters outside, —not the ‘internalist’ approach that advocates the growth of scientific knowledge has its internal logic. According to him, the then improvements in the machine technology paved the way for a new direction for the formulations of science in such a way that it “constructs life-history of a process . . . in which the run of causation unfolds itself in an unbroken sequence of cumulative change” (Veblen 1961a [1919]: 16). Afterwards, since science, by definition, is an attempt to interpret facts, in a broad sense, individuals begin to think in terms of cause and effect. This indicates the modern point of view or contemporary ‘habit of thought’ peculiar to the era of machine process.

of machine industry. In Veblen's analysis, in the era of machine process while predatory habit of thought and ceremonial behavior-knowledge manifest themselves in the realm of business activities, the peaceable 'habit of thought' and instrumental behavior-knowledge realize themselves in the sphere of industry. As such, according to Veblen, modern economic system should be evaluated by considering the symbiotic relationship between the process of machine industry and the business considerations:

The scope and method of modern industry are given by the machine . . . The machine industries . . . are in a dominant position; they set the pace for the rest of the industrial system. In this sense the present is the age of the machine process . . . In a like sense the present is the age of business enterprise . . . The businessman . . . has become a controlling force in industry, because, through the mechanism of investment and market, he controls the plants and process . . . [H]e is the only large self-directing economic factor (Veblen 1958 [1904]: 7, 8).

Veblen defines business as an economic activity that is 'lucrative without necessarily being serviceable to the community' (1901: 204). On the other hand, industry, in his scheme, 'is a matter of tangible performance in the way of producing goods and services' (1964b [1919]: 155). As pointed out earlier, with the advent of machine technology, there has taken place a palpable separation between the 'pecuniary employments' and 'industrial employments' in the realm of economic life. Businessmen, being at the pecuniary side of the economic life (1901: 205), are the legally rightful owners of the mechanical equipments used in industrial production, and as such, control them for their pecuniary aims. Their

business-minded considerations exclude industrial serviceability. Veblen puts the basic tension of the modern era thus:

Industry is carried on for the sake of business, and not conversely; and the progress and activity of industry are conditioned by the outlook of the market, which means the presumptive chance of business profits (Veblen 1958 [1904]: 19).

To put it differently, the instinct of workmanship around which industry is built up has become an auxiliary element in the order of business enterprise and subordinated to the pecuniary ends of businessmen.

Veblen's theory of business enterprise links back to his characterization of the 'leisure class' presented in *The Theory of the Leisure Class* (1973 [1899]). Leisure class, for Veblen, is the class that has to do nothing with industrial employments at all but with wasteful pecuniary or business aspirations. Being a small part of the populace and yet the owner of the material resources of the country, leisure class spends its wealth for 'conspicuous consumption'. The logic of leisure class underlies that of the businessmen. Veblen sees the legitimate mainstay of devastating pecuniary employments of the businessmen as the unquestionable philosophical belief of the community in natural right and natural liberty, formed by John Locke, which function as the safeguards of the institution of private property and the freedom of enterprise, respectively. In Veblen's words, "[t]he ultimate ground of validity for the thinking of the business classes is the natural-rights ground of property, —a conventional, anthropomorphic fact having an institutional validity" (1958 [1904]:151).

Veblen characterizes the motive, method and aim of the businessmen as pecuniary gain, purchase and sale, and accumulation of wealth in terms of pecuniary value, respectively (1958 [1904]: 16). As such, since their methods are essentially dependent upon the sale, he realizes his gains by allowing industry to produce goods according to its ‘vendibility’ and ‘convertibility into money’ instead of to its ‘serviceability’ to the needs of the community at large (1958 [1904]: 30). On the other hand, goods produced with a single view to ‘vendibility’ and ‘convertibility into money’, not ‘serviceability’, can be pure waste in terms of the needs of the underlying population. Businessmen derive their profits from these waste goods by selling them with profitable prices in the market. Thus, in the last resort, they determine the volume of industrial output according to the fundamental business principle of ‘what the traffic will bear’, that is, ‘what will yield the largest net return’ (1964b [1919]: 91; 2001 [1921]: 8). In this sense their primary concern under the sway of price system is to thwart overproduction in order to maintain profitable prices. For businessmen, overproduction amounts to the surplus of volume of industrial output to be sold with profitable prices in the market, which would result in declining prices:

The requirements of profitable business will not tolerate it [overproduction]. So the rate and volume of output must be adjusted to the needs of the market, not to the working capacity of the available resources, equipment and man power, nor to the community’ s need of consumable goods (Veblen 2001 [1921]: 8-9).

As things turned out, overproduction is evaluated in terms of pecuniary value in the businessmen’s scheme, far from indicating a material disequilibrium. Veblen writes elsewhere, ‘[t]he characteristic fact in a case of general ‘overproduction’ is

that the basis on which ‘remunerative prices’ and customary profit are computed has become obsolete” (1892: 490).

At this stage, Veblen defines the businessmen’s controlling attempts of the industry that results in lowering the industrial serviceability and in the unemployment of equipment and manpower for the sake of their pecuniary aims at the cost of the community with a provocative term, ‘sabotage’. Sabotage, “a conscientious withdrawal of efficiency” (2001 [1921]: 13), is the routine businesslike control of the amount of industrial output to create a more profitable market. In order to obtain maximum profit from higher prices, businessmen recourse to sabotage and mitigate the efficiency of industrial system and industry’s working at full capacity. To Veblen, sabotage, the businesslike management of the industry, is in the nature of the price system and describes the organic relation between business enterprise and industry.

The immediate devastating effect of sabotage oriented towards raising prices over the machine process and, therefore, material welfare of the community is the disturbing ‘interstitial adjustments’ (1958 [1904]) between the mechanical sub-processes. Veblen defines the modern machine industrial system as “a concatenation of process which has much of the character of a single, comprehensive, balanced mechanical process” (1958 [1904]: 18). Accordingly, the efficient work of the modern industrial system is dependent upon the due coordination between all mechanical sub-processes.

[T]he industrial system of the new order will work at the high rate of efficiency of which it is capable, only under suitable conditions. It is a comprehensive system of interdependent working parts, organized on a large scale and with an exacting articulation of parts . . . No one member or section of this system is a self-sufficient industrial enterprise, even if it is true that no one member is strictly dependent on any other one . . . [T]he measure of its successful operation is determined by the effectual team-work of its constituent parts (Veblen 1964b [1919]: 51-52).

Therefore, industrial system can work efficiently to produce maximum output for the needs of the community insofar as all industrial going concerns operate in the 'effectual team-work' as including all component part of the system. In the case of maladjustment in the interstitial coordination of this concatenated industrial process, its balanced working is hindered and hence it works with excess capacity. Any maladjustment in any sub-process of industry spreads over the whole system immediately, which causes waste. In this sense, according to Veblen, the gravest urgency of the modern industry resting upon machine technology is to keep the balance of working reciprocal relations between sub-processes to impede idleness and waste and, therefore, to enhance the material welfare of the underlying population.

Thus, the material and economic welfare of the underlying population is dependent upon unremitting and efficient working of industry without any maladjustment between sub-processes to yield the maximum output. However, the pecuniary aims of the businessmen are at odds with this process and outcome. Therefore, by curtailing the volume of industrial output through sabotage of the 'interstitial adjustments' they seek to increase prices. Businessmen realize the

sabotage of the 'interstitial adjustments' by disturbing the business or pecuniary transactions that regulate appropriate coordination of the exchange of input and output between the sub-processes. These pecuniary transactions proceed on money between the sub-processes. Yet, businessmen whose pecuniary gains are more important than ensuring the 'interstitial adjustments' possess money. As a result, the pecuniary gains of businessmen do not derive from industrial serviceability, but the interruption of the industrial system.

As things turn out, the businesslike management of industry, sabotage, in Veblen's system, coincides with the ceremonial behavior that thwarts progress. On the other hand, industrial serviceability embodied in the instinct of workmanship is the instrumentalist behavior that is constantly engaged in an effort to bring new solutions in technical sphere to problems. Sabotage, in the last resort, hinders technological advance. Because, in order to maintain profitable prices, businessmen prefer "limiting output", since it is less risky, in the place of "lowering production cost of an increased output" (2001 [1921]: 27) which can be realized only through technical advance including invention, innovation, learning-by-doing and so on. Thus, in the modern economic system organized on the precepts of the price system 'imbecile institutions' win great victory over the sensibility of the instinct of workmanship. And yet, this is not sustainable in the long run in view of the effects and "the cultural incidence" (1958 [1904]: 144) of the machine technology.

2.6. Machine Technology and the Evolution of Capitalism

According to Veblen, cultural effects of the machine technology undermine the institutional framework serving the ends of business enterprise day by day. In this sense, for Veblen, the sway of business enterprise over the society is a transitory domination. The mainstay of Veblen's argument as to the future of the capitalism lies in the iconoclastic propensity of habits of thought inculcated by the machine technology. He states that "[t]he machine throws out anthropomorphic habits of thought" (1958 [1904]: 148). As such, the machine technology enervates the atavistic and ceremonial belief in the philosophy of the natural rights and the natural liberty that is traceable back to the eighteenth century liberal ideas underlying the institution of private ownership and the freedom of business enterprise that allow the businessmen to subordinate the machine technology of industry to their harmful pecuniary aims at the expense of the community. Therefore the discipline of the machine technology disposes with eventually any outmoded habit of thought that is a holdover of the past institutional order.

The institution (habit of thought) of ownership or property is a conventional fact . . . [Yet] [t]he discipline of the modern industrial employments is relatively free from the bias of conventionality . . . The industrial classes appear to be losing the instinct of individual ownership. The acquisition of property is ceasing to appeal to them as natural, self-evident source of comfort and strength. The natural right of property no longer means so much to them as it once did (Veblen 1958 [1904]: 152, 153, 155).

As already emphasized, it is essential to recognize the distinction between short run and the long run effects of technology over the community. At bottom, Veblen deals with the long run effects. In this sense, the kernel of Veblen's theoretical analysis resides in that it is less interested in the *pace* of the change than in the *course* of the change. His evaluation below of the future of business enterprise must be interpreted accordingly:

The growth of business enterprise rests on the machine technology as its material foundation. The machine industry is indispensable to it; it cannot get along without that machine process cuts away the spiritual, institutional foundations of business enterprise; the machine industry is incompatible with its continued growth; it cannot, in the long run, get along with the machine process. In their struggle against the cultural effects of the machine process, *therefore business principles cannot win in the long run*; since an effectual mutilation or inhibition of the machine system would gradually push business enterprise to the wall; whereas with a free growth of the machine system business principles would presently fall into abeyance (Veblen 1958 [1904]: 177, emphasis added).

In Veblen's estimation, in the long run the end of the price system and the dominance of the vested interests will come off through the spreading up the iconoclastic "technologized value systems" (Tilman 1973: 157) of the machine technology at odds with the business principles. Spreading of these common technological and scientific values that make up modern point of view over the community, according to Veblen, will be realized through technological improvements in transportation and communication (Veblen 1964b [1919]: 40).⁸

⁸ Veblen's estimation bears resemblance to the communication theory of Jürgen Habermas. Habermas' solution for the rationalization of modernity is dependent on the mutual understanding of the subjects between the individuals through proper "communication action" (Habermas 1987).

Machine technology imposes a matter-of-fact class-consciousness upon the community by urging them to think in terms of ‘cause and effect’ and ‘tangible performance’ against the pecuniary affairs of the business enterprise. For Veblen, this “industrial solidarity” (1894: 458) formed around the common technological values, will put an end to the capitalist system based upon the competitive price system and pave the way for a universal ‘democratic industrial republic’. Tilman (1973) summarizes the process overtly thus:

[M]achine technology in the industrial process generates its own value system in the minds of those who work around it by fostering or inculcating its two kinds of rationality in labor force. This rationality is characterized by secularism, equalitarianism, reasoning in a matter-of-fact way from cause to effect, and creates dislike for the more traditional forms of authority and its privileges. In Veblen’s scheme, it is the technological values generated by the machine process which eat like a corrosive acid into the institutional vitals of the present order (Tilman 1973: 157).

In addition to the philosophical inferences as to the long-run cultural effects of the machine technology, Veblen develops a political ideology of engineering against the business enterprise. In *The Engineers and the Price System* (2001 [1921]) Veblen sees the engineers as the potential leading class to upset the sway of the businessmen. In view of scientific and engineering knowledge, quantitative precision and mechanical accuracy regarding time and sequence are the indispensable aspects of machine industry for its proper and balanced working (Veblen 1958 [1904]: 10). He suggests that engineers and

Yet, it should be noted that Habermas does not touch upon technology directly in his theory of communication.

technicians are the only groups of people to manage the industrial system for the benefit of the community. Accordingly, he comes for a great deal of criticism for advocating ‘technocratic elitism’, ‘technocratic managerialism’ (Bell 1963; Dobriansky 1957; Riesman 1953a; 1953b; Stabile 1986; 1987) and ‘scientific collectivism’ (Hodder 1956; Rutherford 1992). However, what Veblen suggests is not a technocratic order. First of all, it is organized on highly decentralized political structure. At this stage, without going into the details of Veblen’s approach to engineers and the features of his ideal political order⁹, two vital points of this matter must be mentioned concerning the evolution of capitalism in Veblen’s system. Firstly, his political ideology of engineering should be evaluated as a short run analysis. As emphasized earlier, Veblen deals with the evolution of the institutional order in the long run. As such, engineering in Veblen’s system does not entirely correspond to an occupation peculiar to a definite time but represents instrumentalist knowledge and the instinct of workmanship in his social theory. That is, engineering is the apex of the evolution of the sense of workmanship. Secondly, and more importantly, in the long run, on the way towards his ideal institutional order, namely, ‘democratic industrial republic’ organized on ‘a single industrial organism’ (Veblen 18 94: 459) and a non-competitive price system, engineers’ leader position is bound to disappear. The order in question will not come about through a revolution by the engineers but by the underlying population sharing the same scientific and technological values with the engineers. As Tilman also indicates ‘in the long run . . . the society will . . . not receive their guidance’ (Tilman 1972: 311; 1996:

⁹ For Veblen’s ideal political position, see Tilman (1972; 1973; 1985; 1986; 1988).

171). Since the value system of machine technology is not only valid in the industrial plant, but also extends in the community. In Veblen's words, "[t]he intellectual and spiritual training of the machine in modern life, therefore, is very far-reaching. It leaves but a small proportion of the community untouched" (Veblen 1958 [1904]: 153). As such, in the long run everybody becomes an engineer in terms of habits of thought.

Granted all this, last but not least, Veblen's reflections about the evolution of capitalism and the business enterprise described above are not related with the calculable future. Despite the popular discontent about the inefficient working of industry, sabotage is still being tolerated by the industrial classes and the underlying population. This stems from primarily outmoded habits of thought embodied in social life. Of much greater significance, for the time being, is that the instinct of workmanship has been 'contaminated' by business and pecuniary affairs and, therefore, the community is unaware of the unfairness of the business considerations. Veblen states that the vested interests are safe, but 'just yet'.

the underlying population are as nearly uninformed on the state of things as the Guardians of the Vested Interests, including the commercialized newspapers, can manage to keep them, and they are consequently still in a frame of mind to tolerate no substantial abatement of absentee ownership; and the constituted authorities are competently occupied with maintaining the status quo. There is nothing in the situation that should reasonably flutter the sensibilities of the Guardians or of that massive body of well-to-do citizens who make up the rank and file of absentee owners, just yet (Veblen 2001 [1921]: 104).

2.7. Summary

In this chapter, we have scrutinized the place of technology in Veblen's theory of social change. We will now formulate technological process in Veblen's scheme through a graphical demonstration below. Firstly, this simplifying illustration shows that there are two sorts of instincts: peaceable and predatory instincts. Among the peaceable innate propensities of man, the instinct of workmanship and the instinct of idle curiosity are the engines of technical, scientific and rational knowledge that give rise to new technical possibilities, that is, innovations. To Veblen, this natural endowment of man residing in instincts triggers the technical process that generates productive forces. Moreover, material life of the community is built upon the organization of productive forces. Once the material milieu becomes established, the line of reasoning, which Veblen calls habits of thought, of the community that shapes the partial structure of institutional order arises. The process that is mentioned up to here is a process that gives birth to dynamic technical institutions that force existent institutional order to change. However, when habits of thought are institutionalized and begin to serve to shield the *status quo*, predatory instincts that are at variance with dynamic technological institutions and resist change burst upon the scene. In dealing with the existent institutional scheme, business enterprise manifests itself as the outcome of predatory instincts which lead through the institution of private property to the formation of a leisure class. Members of this leisure class control the business enterprise. Predatory instincts and therefore business considerations constitute the other side of the institutional order which Veblen calls ceremonial

institutions. In Veblen's system, within this two-pronged institutional arrangement, an open-ended conflict that constantly generates new phases in the long run comes about.

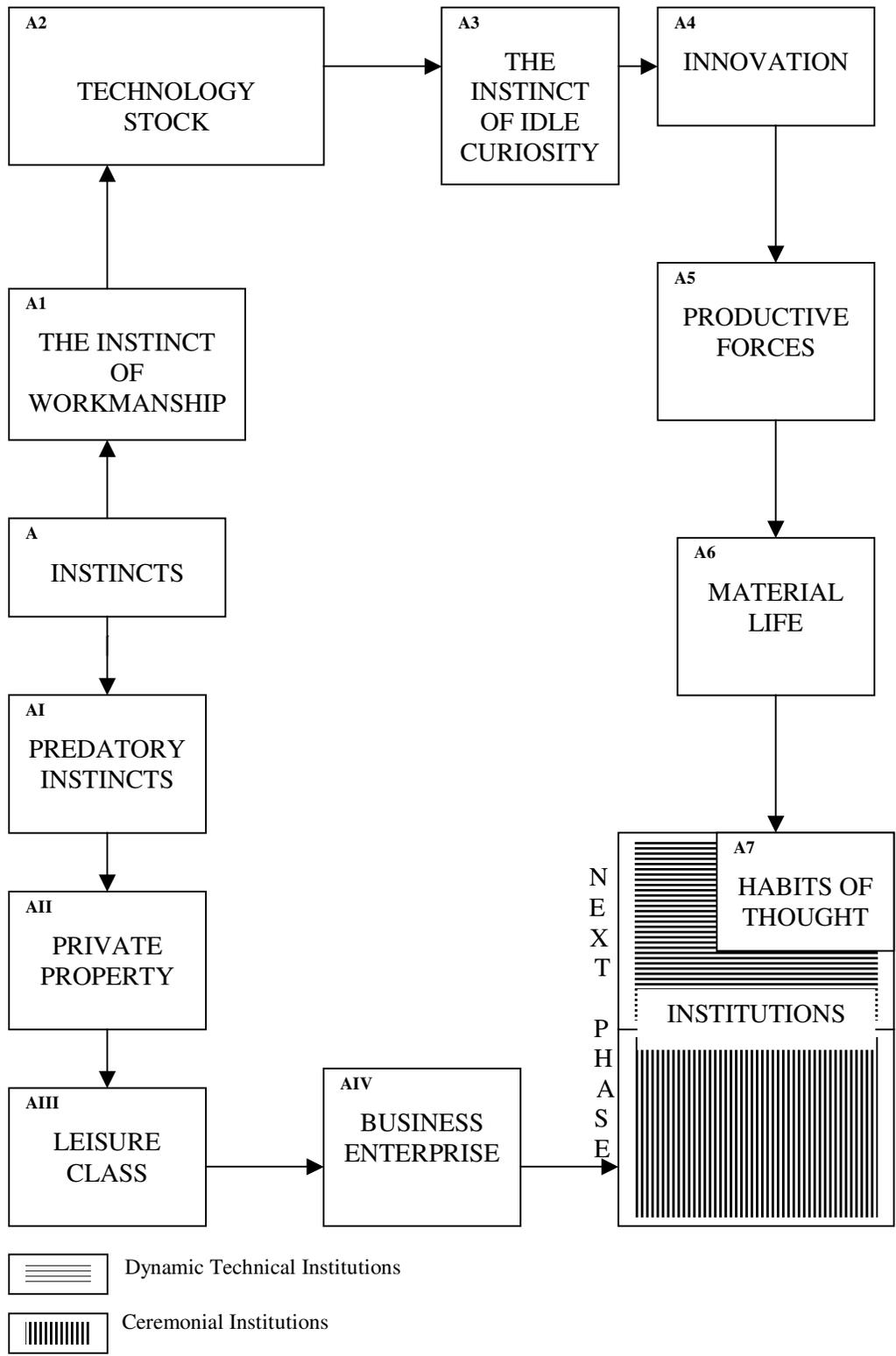


Figure 1: Technological Process According to Veblen.

CHAPTER 3

SCHUMPETER'S APPROACH TO TECHNOLOGY

Schumpeter makes an effort to develop a *pure* economic theory of development to reveal the *modus operandi* of dynamic factors of economic development in capitalist society. The efflorescence of his endeavor to grasp the dynamics of development occurred when his first *magnum opus* on the analysis of motion, *The Theory of Economic Development (Theorie der wirtschaftlichen Entwicklung)*, was published in German in 1911.¹⁰

Oddly enough, though his chief concern deals with analyzing dynamic factors of capitalist motion, he begins with assuming a changeless economy that he calls 'circular flow' in which there is no momentum 'to construct a *theoretic* model of the process of economic change in time . . . to answer the question how the economic system generates the force which incessantly transforms it' (Schumpeter 1951a [1937]: 158-159, emphasis added). For Schumpeter, such a model 'gives us, as it were, the bare bones of economic logic' (1939: 68). Therefore, Schumpeter takes this stationary¹¹ economic system as both a starting

¹⁰ The English translation of this book appeared in 1934 for the first time.

¹¹ Schumpeter's circular flow model refers to a point of equilibrium in which quantitative and qualitative changes are absent. However, whether the circular flow refers to a static or stationary state is a highly problematic issue owing to the time dimension. Sometimes the terms 'static' and 'stationary' are being used with some confusing effects in the literature. Oakley, for instance, prefers to define the state as "*steady* circular flow" (Oakley 1990: 54). For the differences of these terms see Schumpeter (1937: 159; 1939: 35-38; 1954: 963-967; 1961 [1934]: 82-83).

point and an analytical tool. At this point it should be noted that the circular flow is not an “unrealistic” but an “abstract” construction (Sweezy 1943: 93).

Schumpeter builds up his changeless economic model around the well-known assumptions of static neoclassical equilibrium theory.¹² As such, his circular flow model is to a certain extent the same as both the Walrasian state of general equilibrium and the Marshallian long-run equilibrium. In effect, Walrasian general equilibrium format is the mainstay of his circular flow.¹³ As a result, Schumpeter envisages an economy that reproduces itself at a constant rate from one year to the next on the basis of the premises of orthodox economics. By so doing, he aims at answering the question of which dynamic factors disrupt the stationary capitalist economic system in order to introduce development

¹² These assumptions are full employment, zero profits, zero interest, long run-equilibrium with prices equal to average costs, no stock of goods, equality of supply and demand, stable savings, perfect competition, private property, given amount of labor at any time, commercially organized state (that is, capitalist economy), labor and land as only two productive forces, imputation theory as determinant of the values of labor and land at the theoretical level (Clemence 1963: 24, 26; Dente 1977: 109, 110; Schumpeter 1961 [1934]: 5, 7, 8, 9, 17, 24). Yet, it should be noted that while static economy is an analytical tool for Schumpeter, it is regarded by traditional economists as an end in itself.

¹³ Schumpeter’s circular flow model, in effect, refers to “the capitalist system in a state of simple reproduction” (Oakley 1990: 15). Though Schumpeter regards the views of Physiocrats, Adam Smith, David Ricardo and Leon Walras as the theoretical origins of his simple reproduction model, he prefers to ignore Karl Marx’s reproduction schema (1939: 36; 1961 [1934]: 18). “To Walras”, Schumpeter writes, “we owe a concept of the economic system and a theoretical apparatus which for the first time in the history of our science effectively embraced the pure logic of the interdependence between economic quantities” (1951a [1937]: 165). This stems from his aim at revealing that, above all, profit does not flow from exploitation of labor but from another process, as will be made explicit later. For this very reason, Hodgson (1994) argues that this is “[w]hat gives his theory an apparently schizophrenic quality . . . [because] Walras is widely regarded as the antithesis of a fully dynamic or *evolutionary* approach in economics” (1994: 29). Freeman (1990) also claims that Schumpeter’s commitment to Walrasian general equilibrium theory is not congruent with his theory of innovation and development (1990: 19). Cf. Arena and Festré (1996). Although it is a very common view that Schumpeter is a follower of Walras, Arena and Festré (1996) insist this is not true. Rather, the static economic state in Schumpeter’s writings is inspired by Wicksell. Specifically, they argue that Schumpeter definitely was not “a follower of Walras in realm of monetary theory” (1996: 168).

theoretically.¹⁴ In line with these aspirations, we will make an effort to denote dynamics of capitalist motion theoretically¹⁵ and to bring an explanation to the evolution of capitalism in which technology is the most forefront factor within the institutional economics of Schumpeter.

In the first section of this chapter we will discuss the basic ideas of Schumpeter about development, and its three essential driving forces, namely, innovation (new combinations), entrepreneur and bank credit. The second section is devoted to a critique of Schumpeter's theory of innovation and entrepreneurship. Third section will be reserved for his reflections about the evolution of capitalism with a close focus on contemporary case of technology and entrepreneurship. Finally, we will synopsise and demonstrate Schumpeter's vision by means of a chart.

¹⁴ By analogy, Schumpeter gives an example of the blood circulation in animal organism that refers to the stationary circular flow model he offers. Change in the channels of the blood in time corresponds to economic development (Schumpeter 1939: 36; 1961 [1934]: 61)

¹⁵ Here we have to mention that our aim is to draw attention to the theoretical elucidation of technology with its dynamic attributes in the Schumpeterian system, especially in the first two sections. Therefore, we consider much more his views on the matter that are displayed in *The Theory of Economic Development* (1961 [1934]) than in his later writings, particularly *Business Cycles* (1939). While the former is "theoretical" in terms of aim and method (1961 [1934]: x) and is not referred to the "beginner or non-professional reader", the latter is written considering much more the "general reader" (1939: v -vi). Though Schumpeter's primary concern is to make out the dynamic factors of change in theory, he extends his aim in *Business Cycles* as including historical and statistical analysis techniques as is understood from its subtitle: "*A Theoretical, Historical, and Statistical Analysis of the Capitalist Process*". For this reason, Mirkowich (1940), Sweezy (1943), Kuznets (1940) and Freeman (1990), by pointing out the problems of *Business Cycles*, suggest that one should distinguish Schumpeter's theory of economic change from the concepts displayed in this book in order to understand the theoretical foundations of economic development triggered by innovations. Yet, we will also focus on his statements in *Business Cycles* elsewhere to present how his concept of innovation changed in time in a way not congruent with his earlier approach.

3.1. Technology in Schumpeter's Theory of Development

Schumpeter defines two distinct economic phenomena. First, he considers a static phenomenon described above, and secondly, a dynamic phenomenon corresponding to economic development initiated by discontinuous waves of innovations carried out by entrepreneurs with an eye to profit dependent upon bank credit. Schumpeter argues that static analysis or orthodox equilibrium theory cannot explain "the consequences of discontinuous changes, . . . the occurrences of such productive revolutions nor the phenomena which accompany them. It can only investigate the new equilibrium position after the change" (Schumpeter 1961 [1934]: 62-63). Dissociating himself from the previous classical economists, Schumpeter is of the opinion that classical economists' considerations about economic phenomena such as technical change, capital formation, credit creation, interest, entrepreneurial profit are theoretically wrong owing to the fact that they address them by way of static analysis, treating them as given and outside of the scope of economic theory. In juxtaposition, Schumpeter, by way of ushering them in the realm of dynamic economic theory, is engaged in an effort to denote endogenous factors that alter the economy 'from within', not exogenous factors such as war, revolution, government policy, earthquakes, *etc.*

By development, therefore, Schumpeter means "only such changes in economic life as are not forced upon it from without but arise by its own initiative, from within" (1961 [1934]: 63). As things turned out, Schumpeter's concept of development deals with the growth and alteration path of a capitalist

society, not with the specific developmental problems of underdeveloped countries that are usually the exclusive focus of development economics. Thus, by development, he means evolution or change of economic order instead of progression.

Now, a closer look at the three essential elements of development that revolutionize it incessantly 'from within' are in order. We mean innovation ("cause"), entrepreneur ("subject"), and bank credit ("means") (Shionoya 1997:163).

3.1.1. Innovation

Schumpeter's chief concern is to reveal the effects of innovations or new technical possibilities on the economic process and the evolution of capitalism. In his first book, *The Theory of Economic Development* (1961 [1934]), he deals much more with the theoretical explanation of the consequences of innovations and how they initiate economic development. In his second *magnum opus* on development, *Business Cycles* (1939), he aims at showing the role of innovations in the unstable successive economic waves that manifest themselves as business cycles. According to his theory of business cycles the instability of capitalist economic development stems from, first of all, the introducing of new innovations into the market that also causes eventually a new equilibrium.¹⁶

Without going into the details of his theory of business cycles a brief elucidation

¹⁶ Cf. Laumas (1962). Laumas (1962) points out the significance of the size of innovations that Schumpeter does not pay attention. He states "the size of the disturbance [innovation] is of great relevance to Schumpeter's process of economic development. If there is a small disturbance, it will soon peter out and will not result in development. To result in development the size of the disturbance must be quite large" (1962: 659).

can show the central position of technology in Schumpeter's scheme. His theory can be put tersely thus: Insofar as new innovations are made, the followers or imitators enter the market (diffusion of new technologies in a sense) with new credit demands to produce outputs with new technologies. Therefore, as bank credits expand, on the one hand, the amount of productive inputs decreases and, in turn, their prices increase; on the other hand, as the amount of output in market boosts the price level decreases. Then, credit supply diminishes and interest rate increases. Finally, the boom period is replaced by the depression period that is also a sign for a process of recovery and subsequently prosperity. Depression period, in effect, is the cost of the growth of economy. In other words, "depression is a struggle for a new equilibrium" (Dente 1977: 115).¹⁷

Schumpeter enumerates three internal factors that set in motion the process described above. These exogenous factors of economic development are, firstly, "changes in consumers tastes"¹⁸, secondly, "changes in the quantities of factors of production" (growth)¹⁹, and thirdly, "changes in the method of

¹⁷ In Schumpeter's early writings there is only one cyclical movement including two successive phases, namely, prosperity and depression. More specifically, it consists of prosperity, recession, depression and recovery, respectively. However, he later regards at least three such movements instead of one wave-like movement. In *Business Cycles*, he is led to conclusion that there are three classes of such cycles—Kondratieff, Juglar, and Kitchin.

¹⁸ For Schumpeter, economic development primarily is concerned with "the sphere of industrial and commercial life" (1961 [1934]: 65). Assuming tastes as given, he does not take into account the determining force of consumer preferences in terms of an active factor in the process of economic development. More specifically, Schumpeter is of the opinion that "[i]t is . . . the producer who as a rule initiates economic change, and consumers are educated by him if necessary" (1961 [1934]: 65). Accordingly, innovations are brought about by those in the sphere of industrial production.

¹⁹ Growth of economy is not a process of development for Schumpeter. Within the process of growth new phenomena in terms of qualitative change do not occur. Therefore, it is "only process of adaptation of the same kind as changes in the natural data" (1961 [1934]: 63). However, Schumpeter deals with revealing the creative responses. By growth, he means "changes in economic data which occur *continuously* in the sense that the increment or decrement per unit of time can be currently absorbed by the system without perceptive disturbance. Increase of

supplying commodities” (Schumpeter 1939: 72-87). The last one corresponds to innovation and invention, that is, the concept of economic evolution.²⁰ Much as these are to some extent in mutual relation, for him, “innovation is the outstanding fact in the economic history of capitalist society” (1939: 86). At this stage, before passing to his concept of innovation, it should be noticed that invention and innovation, for Schumpeter, are two different phenomena.

Inventions and their commercial exploitation, namely, innovation, are economically and sociologically two distinct phenomena. Though the same agent may bring them about, this can occur only by chance. While innovation is of commercial or business nature, invention, being of no consequence to the economic realm, is the result of mostly “unsatisfied human need perceived by the inventor” (1939: 85n). He sets forth the relation between these two distinct phenomena as follows:

Economic leadership in particular must be hence distinguished from ‘invention’. As long as they are not carried into practice, inventions are economically irrelevant. And to carry any improvement into effect is a task entirely different from the inventing of it, and a task, moreover, requiring entirely different kinds of aptitudes (Schumpeter 1961 [1934]: 88).

population, resulting in an increase of the supply of labor at most a few percent year . . . is the outstanding example (1935: 4). In another statement he writes: “I speak of economic growth during any stated period if the trend values of an index of per capita total output of goods and services have increased during that period” (1947b: 2).

²⁰ Schumpeter in *Business Cycles* (1939) uses the term ‘economic evolution’ to refer to economic development (1939: 86).

Therefore, invention, according to Schumpeter, must be considered as an exogenous factor which is of no importance to economic life while innovation is an endogenous phenomenon that alters data from within.²¹

As for innovation in Schumpeter, it represents a process in which entrepreneurs produce things known by consumers with a new method or new things with the old method by *combining* the means of production that happen to be *used* or *unused* in a new organizational milieu. The criterion of any innovative activity to be rated as a new combination is to present a new phenomena in terms of product, process or organization spontaneously and discontinuously. Development, then, is defined, in Schumpeter's sense, "by the carrying out of new combinations" (1961 [1934]: 66). Schumpeter characterizes five cases that refer to such new combinations or innovations.

First of all, he lists "(I) The introduction of a new good—that is one with which consumers are not yet familiar—or of a new quality of a good" (1961 [1934]: 66). This case apparently indicates the process of *product innovation* "which may even serve as the standard case" (1939: 84). However, Schumpeter restricts the scope of the process of product innovation as including only consumer commodities, not means of production.

²¹ This is not an isolated statement in Schumpeter writings. He emphasizes this distinction in an off-cited passage. As such, it is his emphatic opinion that "[i]nnovation is possible without anything we should identify as invention and invention does not necessarily induce innovation" (1939: 84). Cf. Solo (1951). Solo (1951), a critique of Schumpeter's theory of innovation, argues that inventions, namely, "changes in the level of technological knowledge" (Solo 1951:422), are the source of innovations, "actual technological arrangements" (1951: 417). To him, innovation, contrary to Schumpeter, is not the extraordinary business activity. Inventions, for Solo (1951), being a potential part of the technical change as much as innovations, are not outside of the economic realm. Inventions like innovations "are subject to costs and result in revenues like any other business activity" (1951: 417).

The second form of the new combination Schumpeter points out indicates another type of process of innovation, namely, *process innovation*. It is “(2) The introduction of a new method of production, that is one not yet tested by experience in the branch of manufacture concerned” (1961 [1934]: 66). Here the kernel of Schumpeter’s argument lies in that the carrying out of new combination related to product and process innovations does not require necessarily employing the unused means of production. This brings us to the second definition of development or innovation in Schumpeter’s scheme. Insofar as the used supplies are employed with a different method, it is regarded as new combination and regarded as innovation or technical advance. This process is brought about by withdrawing the means of production from some old new combinations (1961 [1934]: 67-68). As things turn out, this points out to the reallocation of resources.

The last three cases of new combinations Schumpeter offers correspond, in a broad sense, to the organizational aspect of innovation. He specifies these as: “(3) The opening of a new market . . . 4) The conquest of a new source of supply of raw materials or half-manufactured goods . . . 5) The carrying out of the new organization of any industry” (1961 [1934]: 66). However, the last three forms of new combinations rest less on technical talent and skill of entrepreneurs than in the cases (1) and (2). That is, they imply mostly managerial talent and skill in decision making in the process of the carrying out of new combination, not having to do with introducing new commodities or things familiar to consumers with a different method. At bottom, the first two type, process and product innovations, occupy more place in his theory of innovation. At this point, it

should be noticed that in the five forms enumerated above supply-side effects are emphasized. Schumpeter makes an effort to draw attention to “changes in the methods of supplying commodities” (1939: 84) as the most outstanding internal factor that induces the waves of economic development. Elsewhere he writes:

Innovation, unless it consists in producing, and forcing upon the public, a new commodity, means producing at smaller cost per unit, breaking off the old ‘supply schedule’ and starting on a new one (Schumpeter 1928: 378).

Schumpeter’s scope of definition of innovation includes both technical innovations, as in types (1) and (2), and organizational and managerial innovations, as in types (3), (4) and (5). However, the scope of Schumpeter’s concept of innovation changes in time. Three additional cases come into scene in his second *magnum opus* on development, *Business Cycles* (1939), under the heading of “Taylorization of work, improved handling of material, the setting up of new business organizations such as department stores” (1939: 84). More importantly, Schumpeter gives a new definition to his central concept of innovation in that book. According to this characterization, innovation amounts to getting a new production function.

We will now define innovation more rigorously by means of the production function . . . Therefore, we will simply define innovation as the setting up of a new production function. This covers the case of a new commodity, as well as those of a new form of organization such as a merger, of the opening up of new markets (Schumpeter 1939: 87).

On the other hand, recalling that Schumpeter takes into account only land and labor as the productive forces (1961 [1934]: 17), his production function is seen to be different from the neo-classical formulation offered by Solow (1957) in which capital and labor are regarded as productive inputs. Be that as it may, these two formulae bear resemblance in terms of characterization of technical change.²² And yet, with this definition Schumpeter actually limits the original extent of innovation. This is so because in addition to its technical aspects, organizational and managerial aspects are also part of his original concept of innovation.

3.1.2. Entrepreneur

Schumpeter, like Veblen, as opposed to the teleological and theological facets of classical economics, regards the human agent as an active and fundamental phenomenon in the course of economic evolution. This human agent is manifested as the ‘new man’, namely, the entrepreneur. In Schumpeter’s scheme, those whose only functions are to carry out the new combinations we call ‘entrepreneurs’ (1961 [1934]: 74, 78).

Schumpeter chooses the entrepreneur, a special sociological type, as the *primum mobile* of the mechanism of economic development. He states that the carrying out of new combinations, being of special importance for his theory, is

²² Cf. Solow (1957). Solow (1957) sets out the neoclassical production function thus: ‘if Q represents output K and L represent capital and labor inputs in ‘physical’ units, then the aggregate production function can be written as:

$$Q = F(K, L; t)$$

The variable t for time appears in F to allow for technical change. It will be seen that I am using the phrase ‘technical change’ as a short -hand expression for *any kind of shift* in the production function” (1957: 312).

the function of “a special type” (1961 [1934]: 81) of person who are much less numerous and “have the ability to handle the transcendence of routines” (Oakley 1990: 103). Therefore, entrepreneurs with a specific talent in introducing innovations into the realm of economic life are “the fundamental phenomenon of economic development” (Schumpeter 1961 [1934]: 74). In Schumpeter’s words, “[t]he mechanisms of economic change in capitalist society pivot on entrepreneurial activity” (1947a: 150).

In the ‘circular flow’, agents involved in industrial and commercial sphere perform only their routine managerial tasks through adaptive responses. On the other hand, innovative activity of entrepreneurs, being of creative response, revolutionizes incessantly the economic realm. Adoptive responses in this sense stem from the existing practices in the economy while creative responses emerge outside of the range of established practices. Considering creative responses to be a result of the activities of entrepreneurs, Schumpeter writes, “a study of creative response in business becomes coterminous with a study of entrepreneurship” (1947a: 150). Therefore, his analysis shows that “without entrepreneurs we have a stationary economy” (Sweezy 1943: 94).

In Schumpeter’s world, ‘entrepreneur’ and ‘capitalist’, though being in a symbiotic relationship, are the two different agents in terms of their tasks in the course of the carrying out of new combinations. For him, the banker is “the capitalist par excellence”, being “a phenomenon of development” (Schumpeter 1961 [1934]: 74). However, entrepreneur need not be capitalist, “irrespective of whether the latter [is] regarded as [owner] of money, claims to money, or

material goods” (1961 [1934]: 75) in order to make innovations. Their access to capital²³ comes about through another mechanism, namely, bank credit supplied by capitalists. At this point, another facet of their relationship manifests itself in Schumpeter’s theory. That is, though attempts by the entrepreneur to break off the ‘stationary circular flow’ involve risks, they are of no relevance to the function of entrepreneurship. For Schumpeter, the risk never falls upon the entrepreneurs, but upon the capitalists, namely, bankers, who provide entrepreneurs with credit to realize innovations. This holds good for the case that even if entrepreneur himself is capitalist at the same time, the risk bearing is not a part of his entrepreneurial function, but his being a capitalist function.

The entrepreneur is never the risk bearer . . . The one who gives credit comes to grief if the undertaking fails . . . [E]ven if the entrepreneur finances himself out of the former profits or if he contributes the means of production belonging to his ‘static’ business, the risk falls on him as capitalist or as possessor of goods, not as entrepreneur. Risk taking is in no case an element of the entrepreneurial function. Even though he may risk his reputation, the direct economic responsibility of failure never falls on him (Schumpeter 1961 [1934]: 137).²⁴

²³ Capital, for Schumpeter, being more than investment goods, is funds by which entrepreneurs can carry out new combinations. To quote Schumpeter, capital “is a fund of purchasing power” (1961 [1934]: 129). He defines capital at some length thus: “*Capital is nothing but the lever by which the entrepreneur subjects to his control the concrete goods which he needs, nothing but a means of diverting the factors of production to new uses, or of dictating a new direction to production*” (1961 [1934]: 116). To put it differently, capital *à la* Schumpeter is more relevant to the money market (1961 [1934]: 123ff), there being no relation between capital and any definite goods at all. Consequently, he goes so far as to say that, [w]e shall define capital . . . as that sum of means of payment which is available at any moment for transference to entrepreneurs (1961 [1934]: 122).

²⁴ According to Kanbur (1980), there can be two different interpretations of Schumpeter’s approach to non-risk bearing entrepreneur. Firstly, entrepreneur can transfer risks he faces to another party. Secondly, he is such a superior human being that he never faces risk at all. To Kanbur (1980), these propositions, being inconsistent with one another, are not entirely satisfactory (1980: 492). Kanbur (1980) is of the opinion that Schumpeterian vision that leaves out risk bearing as part of the entrepreneurial function is unwarranted insofar as it excludes the *opportunity cost* of entrepreneurship. He gives an explanatory case related to this matter. ‘For

Finally, Schumpeter's theory of entrepreneurship bears importance for revealing the source of profit which is not only a financial outcome of their activities, but also implies the "social prestige" (1950a [1942]: 133) of entrepreneurs. As has been emphasized, entrepreneurs carry out new combinations with an eye to gaining profit. Therefore, Schumpeter is of the opinion that (positive) profit, in contradistinction to Marx, is neither the result of the exploitation of labor, nor, in contradiction to many economists, the earnings of capital, but the return for the innovations that break off the 'stationary circular flow'.

3.1.3. Financing Innovations

In Schumpeter's simple reproduction model, that is, the 'stationary circular flow state', all resources at hand are fully employed by competitive markets but new combinations require entrepreneur's domination over means of production. Schumpeter, as emphasized, assumes a stationary circular flow in which savings *ex ante* and stock of accumulated funds or capital are absent. Consequently, bank credit, that is, the creation of purchasing power, enters into his model like a *deus ex machina*, as it were, and is remained to be fundamental means that allow "entrepreneurs to enter resource markets as *additional buyers*" (Oakley 1990: 106).

example" Kanbur (1980) writes, "it could be that the prospective entrepreneur has open to him a safe return in an alternative occupation. *Relative* to this return . . . he *could* end up worse than if he had taken up no occupation at all. This is the sense in which the prospective entrepreneur faces risks" (1980: 493). That is, no matter that entrepreneur has a positive terminal wealth in proportion to his initial position of zero wealth he is the risk bearer in terms of *opportunity cost*.

Schumpeter denotes that ‘successive industrial revolutions’, namely, the waves of technological transformations are heavily dependent upon financial capital. Bank credit is the only means for entrepreneurs to carry out the new combinations. In this sense, in the opinion of Schumpeter credit financing of innovations that forces the economic system into new channels is the *differentia specifica* of capitalism (Schumpeter 1928: 362; 1961 [1934]: 69). So much so that Schumpeter defines capitalism as a “form of private economy in which innovations are carried out by means of borrowed money” (1939: 223) and assigns bank credit a role as essential as that of the other two institutions of capitalism, namely, productive ownership of non-personal means and production, and production for profit (1951c [1946]: 184).

As emphasized earlier, providing credit financing is the function of only the category of individuals that Schumpeter calls ‘capitalists’ (1961 [1934]: 69). On the other side, entrepreneurs are the only group of people that receive bank credit with an eye to making innovations and, in turn, profit. Therefore, entrepreneur becomes a debtor apart from his innovator task. Being a debtor is a case that is never peculiar to anybody except entrepreneur in capitalist society. To state in Schumpeter’s words, “[h]e can only become an entrepreneur by previously becoming a debtor . . . He is the typical debtor in capitalist society” (1961 [1934]: 102). In Schumpeter’s scheme, because the only function of credit is to *serve industrial development*, no man other than entrepreneur needs bank credit in theory. As a result, “development is in principle impossible without credit” (1961 [1934]: 106). Schumpeter thus assumes that bankers are always

willing to supply bank credit to facilitate innovations, and the only way for entrepreneurs to use this credit is to make innovations that imply also growth of output of economy. In this sense Schumpeter sees credit as essential and healthy for industrial development. This point will be made explicit by comparing with Veblen's views on the same matter in section 4.4.

3.2. A Critique

That Schumpeter credits entrepreneur as the mere *individual* responsible for the *discontinuous* innovations with paying no attention to the *cumulative nature of technology*, and, therefore, to incremental innovations, comes in for a great deal of criticism by many. Schumpeter does not clarify the origins and the actual process of innovation, and for this very reason he is claimed to develop a theory of entrepreneurship instead of a theory of innovation and of firm (Freeman 1990: 22, 26; Ruttan 1971: 76, 84). Though he states that the creation of a new firm is a typical case of a new combination and new combinations are, as a rule, embodied, in new firms (Schumpeter 1961 [1934]: 66; 1939: 94) his theory of individualized entrepreneurship remains to be the most forefront factor in the process of innovation. According to Schumpeter entrepreneur needs not to be permanently connected with an individual firm (1961 [1934]: 75). To the extent that he carries out the new combinations, namely, performs his mere function, he is regarded as an entrepreneur whether within a particular firm or not. Therefore, though recognizing the role of industrial R&D departments in large concern, as Freeman (1990) affirms correctly, Schumpeter overlooks "contributions and the role of institution in the accumulation, dissemination and application of new

knowledge” (1990: 25). As a result, although Schumpeter argues that his “model and its working is, of course, strongly institutional in character” involving not only private property, merely money and banks but also private initiative, the model code and business tradition of bankers that coincide with realities of historical facts (Schumpeter 1939: 144), his grave emphasis on individual entrepreneur overshadows its institutional character.²⁵

Schumpeter is less interested in the process of innovation *per se* in the technical sense than its effects and consequences. In this sense, Schumpeter’s writings on innovation reflect a *de facto* state of innovations in which the clear-cut linkage between new technical possibilities and entrepreneurs embodied in firm and credit mechanism is presented. He deals with likely consequences of technical advance on capitalist motion, but not with a theory of innovation in the technical sense. And yet, as pointed out, Schumpeter is the spiritual guide of today’s neo-Schumpeterian branch of evolutionary economics the studies of which are built upon simulation techniques.

Another major point of contention in Schumpeter’s scheme is that, he sees technical change in terms of the waves of discontinuous innovations brought about by the activities of merely individual entrepreneurs. For this reason, Heertje (1998) argues that “Schumpeter is the economist of discontinuity” (1998: 267). It should be also noted that whereas as diverse economists as Marshall and Veblen share a vision of a gradual change in economic progress, in juxtaposition

²⁵ Heertje (1988), similarly, argues that Schumpeter’s approach to technology is not a systematic economic analysis of technical change owing to the fact that “technical change in the sense of the development of new technical knowledge and possibilities, and the diffusion of knowledge are almost absent from his exposition” (1988: 82).

Schumpeter views technology in terms of periodic sharp breaks from the past instead of a 'cumulative causation'. This is reminiscent of Thomas Kuhn's (1970) famous distinction between 'revolutionary' and 'normal' science.

Entrepreneurship as the source of discontinuous technological advance *à la* Schumpeter manifests itself as "a single universal essence . . . from pure logic" (Freeman 1990: 27). This stems from his effort to construct a theoretical not a historical model of capitalist motion and evolution of technology. In this respect, Schumpeter's approach to technology can be rated as *essentialist* in Martin Heidegger's and Jürgen Habermas' sense. Andrew Feenberg (1999) in his book *Questioning Technology* explores the technological origins of the process of social construction by taking a critical position against essentialist and technological determinist views. He denotes two essentialist strategies developed by Heidegger who ignores continuity and by Habermas who discriminates previous stages from later stages in the history of technical action to fix historical serial in a singular essence (Feenberg 1999: 15). In effect, all these are reminiscent of Weberian stance that distinguishes stridently capitalist civilization from pre-modern communities. These essentialist outlooks treat technological phenomenon as being embodied in a pure and single logic that explains its social process without considering historical socio-cultural effects upon it. By the same token, Schumpeter distinguishes premodern societies from modern societies according to their technological level and interprets technology as a discontinuous phenomenon as well as assumes modern technology as unique and as having no precedents. Setting forth the discontinuous ways of technological

advance and, therefore, of social and economic process in capitalist civilization, Schumpeter writes: “What has been done already has the sharp-edged reality of all the things which we have seen and experienced; the new is only the figment of our imagination” (Schumpeter 1961 [1934]: 85). What is more, Schumpeter, being interested in explaining the high stage of capitalism, like Max Weber, sees pre-modern people as irrational in terms of ‘problem-solving reason’ (Reisman 2004: 191). He states that “capitalism develops rationality” (Schumpeter 1950a [1942]: 123). As such, Schumpeter sees primitive man irrational due to its inadequacy of ‘problem-solving reason’ and recognizes capitalist rationality as the highest stage of human rationality. These essentialist views fall into the substantivist approach to technology in which technology is regarded as autonomous and interpret technology, a historical phenomenon, in terms of an ahistorical notional framework. To paraphrase in Feenberg’s words, this essentializing tendency cancels the historical dimension of Schumpeter’s theory (Feenberg 1999: 16). As a result, much as Schumpeter is concerned with revealing economic development *theoretically* in which technology is the driving force for change, his approach in terms of philosophy of technology is close to the essentialist view.

3.3. Technology and the Evolution of Capitalism

Capitalism, Socialism and Democracy (1950a [1942]) is Schumpeter’s best-known work on the evolution of capitalism. In his earlier writings he was primarily concerned with economic development or economic evolution, and growth and business cycles as a result of innovations. In contradistinction, in this

book, he deals with the impact of innovations upon the evolution of capitalism. He repeats his emphatic opinion that capitalism is an evolutionary process that always undergoes a process of change from within through endogenous factors in which innovation is of utmost importance:

Capitalism, then, is by nature a form or method of economic change and not only never is but never can be stationary. And this evolutionary character of the capitalist process is not merely due to the fact that economic life goes on in a social and natural environment which changes and by its change alters the data of economic action; this fact is important and these changes (wars, revolutions and so on) often condition industrial change, but they are not its prime movers. Nor is this evolutionary character due to a quasi-automatic increase in population and capital or to the vagaries of monetary systems of which exactly the same things holds true. The fundamental impulse that sets and keeps the capitalist engine in motion comes from the new consumers' goods, the new methods of production or transportation, the new markets, the new forms of industrial organization that capitalist enterprise creates (Schumpeter 1950a [1942]: 82-83).

Schumpeter once again emphasizes the central role of the carrying out of new combinations in capitalist development here. Within this context, he brings a new characterization to the process of capitalist development, namely, 'creative destruction', the term that reveals the crux of the subject-matter of his analysis of capitalist motion. By 'creative destruction', we must understand that innovation

incessantly revolutionizes the economic structure *from within*, incessantly destroying the old one, incessantly creating new one. This process of Creative Destruction is the essential fact about capitalism. It is what capitalism consists in and what every capitalist concern has got to live in (Schumpeter 1950a [1942]: 83).

In his earlier writings, more specifically in *The Theory of the Economic Development* (1961 [1934]), as has been pointed out, Schumpeter strove to offer a *pure* theory of economic development residing in competitive capitalism. In *Capitalism, Socialism and Democracy* (1950a [1942]), his focus on the matter shifts away from analyzing capitalist development in theory to the contemporary reality of capitalism resting upon monopoly power. To put it differently, Schumpeter, by moving away from his own original theoretical analysis of development in which pure market forces work within a competitive milieu, attempts to handle the situation where, at least temporary, monopolies are not the exception but the rule. Therefore, Schumpeter aims at revealing the evolution of monopoly capitalism by considering, above all, its effects upon technology and its *raison d'être*, that is, entrepreneurship.

Schumpeter recognizes that in 20th century “trustified”, “organized”, “regulated” or “managed” capitalism (1928: 362) takes the place of competitive capitalism. As a result, in ‘trustified’ capitalism ‘innovation is . . . not any more embodied *typically* in new firms, but goes on, within the big units now existing, largely independently of individual persons” (1928: 384).²⁶ In Schumpeter’s scheme, insofar as classical competition is surpassed, the monopoly power of producers, namely, large concerns, rises. Therefore, ‘creative destruction’ is tamed by the mechanism of big-business capitalism. That is, innovative activities are concentrated in large monopolistic firms that impede potential competition of

²⁶ Cf. Sylos-Labini (1992). Sylos-Labini (1992) criticizes Schumpeter for neglecting the role of small firms that play essential role in the progress of innovation as much as the large firms and their relationships with the large-scale firms in terms of evolution of capitalism. For detail see Sylos-Labini (1992: 58-63).

innovations.²⁷ Paradoxical as it may seem, Schumpeter notes that big-business capitalism is more rational and efficient in terms of introducing technological improvements whereas ‘perfect competition is not only impossible but inferior, and has no title to being set up as a model of ideal efficiency’ (1950a [1942]: 106). Therefore, according to Schumpeter, perfect competition is more socially wasteful than the monopoly capitalism.²⁸

However, the crux of the process through which capitalism will come to an end by its very achievements lies in those monopoly practices. Monopoly capitalism furthers the destruction of its own institutional framework, including such elements as private property and free contracting that result in a universal hostility to the capitalist order, so puts an end to technological progress and the social function of individualized entrepreneurship. Entrepreneur, as it were, is the brain of capitalist development, “an organic process” (1950a [1942]: 83) revolutionizing itself from within incessantly, but under the sway of ‘trustified’ capitalism the brain death is inevitable. “Almost by definition the decay of capitalism is the decay of the entrepreneurs. Or, the other way round, the decay of the entrepreneur is the decay of capitalism” (Heertje 1982: 86). Therefore, insofar as capitalism becomes “depersonalized” and “automized” (Schumpeter 1950a [1942]: 133), there will be nothing for ‘individual’ entrepreneur to do. As a result,

²⁷ Incidentally, it should be noted that according to Schumpeter the competition of innovation is the essential type of competition inherent to capitalism instead of price competition between firms selling similar products. To him, neglecting this fact is same as ‘Hamlet without the Danish prince’ (Schumpeter 1950a [1942]: 86).

²⁸ Praising Schumpeter for emphasizing the innovating role of large enterprises, Galbraith (1963) states that large firm “is admirably equipped for financing technical development. Its organization provides strong incentives for undertaking development and for putting it into use. The competition of the competitive model, by contrast, almost completely precludes technical development” (1963: 100).

reduced to routine, innovation “is increasingly becoming the business of teams of trained specialists . . . Bureau and committee work tends to replace individual action” (1950a [1942]: 132-133). However, here it should be noted that this situation does not imply entirely a stationary state. Though the central role of individual entrepreneurs disappears in ‘successive industrial revolutions’, innovations maintain their chief positions as the driving force of change. Yet, the innovative activities of entrepreneurs pass to the hands of large concerns in which individual entrepreneurs become subject to professional team managers. In effect, this situation is far from being a stationary state because under the sway of monopoly capitalism, as emphasized, introducing technological improvements is realized in a more efficient way in proportion to competitive capitalism. One important thing that changes is the subject of the carrying out of new combinations. However, in Schumpeter’s scheme, this process in which “collectivization of economic activity” (Lazonick 1998: 256) replaces individual entrepreneur will pave the way for the decay of capitalism and, therefore, allegedly for socialism of a very sober type automatically.

Since capitalist enterprise, by its very achievements, tends to automatize progress, we conclude that it tends to make itself superfluous—to break to pieces under the pressure of its own success. The perfectly bureaucratized giant industrial unit not only ousts the small or medium-sized firm and “expropriates” its owners, but in the end it also ousts the entrepreneur and expropriates the bourgeoisie as a class which in the process stands to lose not only its income but also what is infinitely more important, its function. The true pacemaker of socialism were not the intellectuals or agitators who preached it but the

Vanderbills, Carnegies and Rockefellers (Schumpeter 1950a [1942]: 134).²⁹

In socialist order extraordinary entrepreneurial talent becomes unnecessary for the process of technological advance. Although individual entrepreneurs of competitive capitalism evaporate, economic development in socialist order will continue depending upon innovative activities of the socialist state. In other words, the State assumes entrepreneurial innovative and technical activities in the process of economic development. At this point, what Schumpeter implies with socialist order after ‘managed’ capitalism needs clarification. In ‘The March into Socialism’ (1950b), he describes “(centralist) socialism as that organization of society in which the means of production are controlled, and the decisions on how and what to produce and on who is to get what, are made by public authority instead of by privately-owned and privately-managed firms” (1950b 446). However, it has not to do with the socialist order under the sway of the proletariat that Marx contemplates. Socialism, for Schumpeter, above all, represents the latest phase of bureaucratic managerial capitalism. Thus, by socialism, Schumpeter means the centralist and highly-bureaucratized order. He writes: “I for one cannot visualize, in the conditions of modern society, a socialist organization in any form other than that of a huge and

²⁹ However, it is largely accepted that Schumpeter is neither a socialist nor a defender of capitalism. He is ‘both an insider and outsider’ (Özveren 2004: 225). Schumpeter’s economics that employs some interpretative hypotheses with far-reaching consequences for economic analysis is too universal and too complex to fit a single mold and a school. It is built on a grand scale (Dosi 1990: 336; Elzinga 1992: 12; Haberler 1969: 467; Sylos-Labini 1992: 63). Relatedly, from Schumpeter’s point of view, to say that socialism will come off does not point out a desirable preference. It is apparent that he does not prefer socialism to capitalism. He states that “[i]f a doctor [Schumpeter himself] predicts that his patient [capitalism] will die presently, this does not mean he desires it [socialism]” (Schumpeter 1950a [1942]: 61).

all-embracing bureaucratic apparatus” (1950a [1942]: 206). In fact, the ‘managed’ capitalism’s evolving into socialism does not prove to be a very sharp change in terms of the power of social order in Schumpeter’s system. Since the authority of bourgeoisie is here to stay. Bourgeois class manifests itself as the superintendent of this system all over again. Schumpeter speaks of bourgeois stratum in socialist system as “a class which, by virtue of the selective process of which it is the result, harbors human material of supernormal quality and hence is a national asset which it is rational for any social organization to use” (1950a [1942]: 204). In other words, just as bourgeois class in monopoly capitalism constitutes managerial capitalist class, it survives in socialism as the tool of the state bureaucracy that manages economy with a public authority. This is because their motives, aims and responsibilities “that exist in the large -scale corporation could no doubt be reproduced in a socialist society” (1950a [1942]: 206). As a result, in Schumpeter’s system, socialism seems to be the highest stage of the centrally ‘organized’ monopoly capitalism.

3.4. Summary

In this chapter, we have handled the role of technological process in capitalist economic development in Schumpeter’s system. We will now illustrate his basic vision concerning technology by means of a chart below. According to Schumpeter, technological process is the result of a specific economic rationality that is different from that of *homo economicus* in orthodox economic parlance due to incorporating uncertainty; and this type of rationality arises from existent “economic pattern” (1950a [1942]: 123). This rationality that develops technical

competence of man is identical with that of entrepreneurship, and as such, Schumpeter counts entrepreneurship as a special leadership in technological process. In this sense, entrepreneurs prove to be the only social stratum that makes innovations through bank credit. As a result of entrepreneurial attempt to carry out the new combinations—innovations, profit occurs. Like bank credit, profit too belongs to entrepreneurs in capitalist development. Through the aspiration of entrepreneurial profit, competition based upon searching for new technical possibilities by entrepreneurs comes about. To Schumpeter, this brings about the quintessence of capitalism, namely, the process of ‘creative destruction’. During this process old technologies evaporate and new ones spring into being. In turn, this generates a new economic pattern. Therefore, the gyration of technological process that is synopsised above begins on the basis of this new economic pattern and continues until the existent technologies die out during the subsequent phase of profit searching. Schumpeter examines also these ever-shifting phases in his theory of business cycles. Hence, the graphical demonstration below represents also one swing of a business cycle.

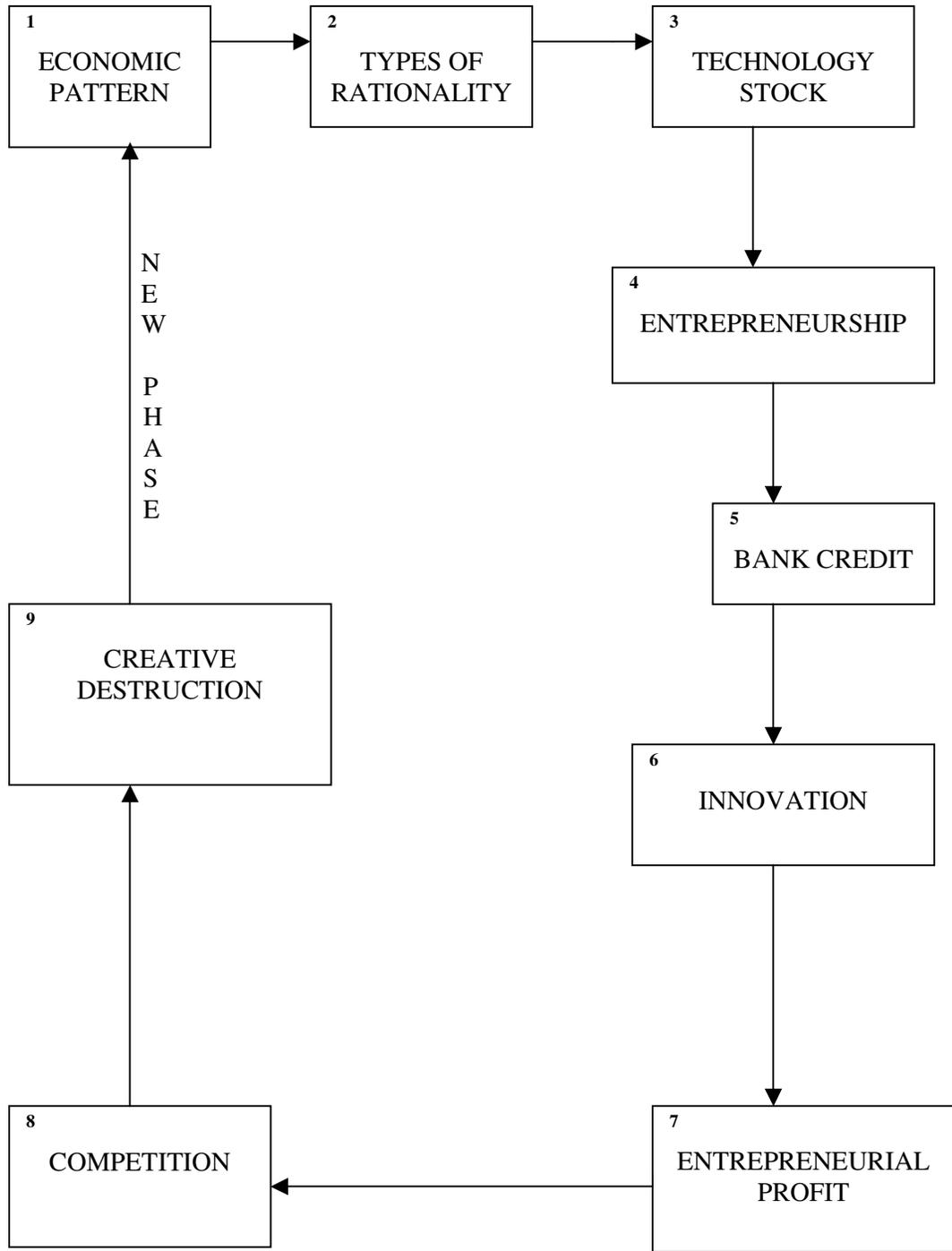


Figure 2: Technological Process According to Schumpeter.

CHAPTER 4

**A COMPARISON OF VEBLLEN AND SCHUMPETER ON
TECHNOLOGY**

In institutional and evolutionary economics Veblen and Schumpeter have had crucial influence upon their subsequent traditions. Their theories are of a rather complex nature, and as such, it is very difficult to situate them in a clear-cut intellectual tradition. Instead, it is conveniently accepted that each of them has an independent system of thought. They examine social and economic processes not only from solely economic point of view, but also from a sociological standpoint. In this sense, sometimes their intellectual approaches as a field of study have been rated as economic sociology. Schumpeter defines economic sociology as “the analysis of social institutions or of ‘prevalent social habits’” (Schumpeter 1956: 246). Elsewhere, similarly, he denotes the object of economic sociology as an attempt to reveal ‘how people came to behave as they do at any time and place’ (1951d [1949]: 287). This is also the very same thing Veblen was concerned with by means of his own instinctive theory. As such, Schumpeter, like Veblen, by appropriating the economic sociology as a branch of investigation, enters into the field of institutional economics. Schumpeter also defines institutions in a similar way to Veblen. For Veblen, institutions refer to ‘habits of thought, points of view, mental attitudes and aptitudes’ (Veblen 1973

[1899]: 133) that resist changes in institutional scheme, for the most part, at least in the short run. By the same token, institutions, as far as Schumpeter is concerned, correspond to “all the patterns of behavior into which individuals must fit under penalty of encountering organized resistance” (Schumpeter 1991a: 438). More to the point, Schumpeter converges with Veblen with regard to the power of institutions in shaping human behavior. He writes parallel to Veblen as follows: “[I]t is society that shapes the particular desires we observe . . . The field of individual choice is always, though in very different ways and to very different degrees, fenced in by social habits or conventions and the like” (1961 [1934]: 91). Nevertheless, Schumpeter’s evolutionary and institutionalist approach is questioned at times due to his appreciation of the development of economic life and, specifically, technological development as a discontinuous process at the *theoretical level* by taking methodological individualism as a starting point in which individual entrepreneur is defined as a “pathbreaker” (Reisman 2004: 59) and as a single social agent that leads to technological and economic development/evolution. Especially in *The Theory of Economic Development* (1961 [1934]) he sticks to individualist methodology as more than a starting point and seems far from displaying the institutionalist approach in the Veblenian sense. In juxtaposition, in *Capitalism, Socialism, and Democracy* (1950a [1942]), he pays attention to institutional change apart from purely economic evolution, but methodological individualism built in ‘individualized’ entrepreneurship is nevertheless here to stay in it.

Before passing to scrutinize their thoughts about technological issues, a few words as regards Veblen's and Schumpeter's social -scientific points of view will be useful in terms of understanding their approaches to technology and methodology as well as their intentions. First of all, Schumpeter seems to deal with revealing the *de facto* state of social phenomena in capitalism around the question of *what is*. In contradistinction to Schumpeter, Veblen puts a grave emphasis on the side of the question of *what ought to be*. In this sense, Veblen, above all, is a moralist. For instance, while Schumpeter thinks that technological advance and business enterprise *are* one and the same thing, from Veblen's point of view "[e]thics and business are not compatible" (Davis 1980:82).³⁰

A prolific literature has arisen concerning their various thoughts, ranging from economic methodology and philosophy, politics, economic sociology to purely economic issues. However, overall comparative studies of Veblen and

³⁰ Around the question of *what is*, the main intention of Schumpeter is to understand the mechanism of change of capitalist economic system in such a way independent of personal value judgments. For this reason, Reisman (2004) defines Schumpeter's scientific attitude "as a detached observer" (2004: 11). As far his social-scientific mind is concerned, Schumpeter's main effort concerning grasping dynamics of development is to leave personal value judgments outside the scope of his own analysis. As such, Schumpeter's main goal regarding the social scientific point is to create a rationality in social sciences as in the natural sciences, which is "free from value judgments" and "wishful thinking" (Schumpeter 1991c: 318). Schumpeter therefore pursues to generate a pure and universal social scientific thought, specifically, scientific economic viewpoint. According to his opinion, his prediction about socialism and approach to capitalist economic development should be accepted as not including any value judgments, but reflecting 'truths'. Therefore, from Schumpeter's point of view, his economic thoughts concerning capitalism are independent from Walrasian economic theory around which he constitutes his theory. However, it is hard to say that Schumpeter's analysis does not have a political bias since each economic theory is built up on the specific system of political, ideological or philosophical thought. Therefore, any scientific thought is, above all, a form of perceiving/knowing way of facts as dependent upon one's own value system. And, 'truths' are constituted around the normative (political, ideological, *etc.*) system of beliefs. As Gergoes Canguelhim states that "[t]o do history of science . . . is one of the functions . . . of philosophical epistemology" (Canguelhim 1994: 52, *A Vital Rationalist: Selected Writings*, ed. F. Delaporte, N.Y: Zone, quoted in Rose: 1998: 158). Rose (1998) writes from Canguelhim's standpoint: "a history of reason . . . is not a history of rationality or rationalization: it is heterogeneous, regional, plural" (Rose 1998: 159), therefore, not universal.

Schumpeter remain very limited. Nevertheless, there is a small number of studies about particular aspects of their theories (Cramer and Leathers 1977; Dente 1977: 105-143; Ferrarotti 1999; O'Donnell 1973; Orkin and Burley 1989; Orkin 1990). In this chapter we aim at comparing their positions regarding technology. To that end, we will classify their thoughts on technology into four headings. First section will be devoted to display their theoretical explanations about capitalism in dealing with the vision of social rationality involved in their theories. Second, we will focus on the role and definition of technology in the process of social and economic evolution in their theories. Third section will be reserved for the agent of technological change in Veblen's and Schumpeter's approaches. In this section, therefore, we will examine the role of entrepreneurs in technical and industrial sphere from their standpoints. Fourth section deals with the function and consequences of credit-money supplied by bankers in technological change.

4.1. Machine Rationality of Veblen Versus Capitalist Rationality of Schumpeter

Rationality is a central social phenomenon in the theories of social change of Veblen and Schumpeter. Both evaluate rationality as a social fact deriving from material and economic life rather than as an abstract phenomenon. Veblen does not designate a specific definition for the term rationality. Alternatively, the term institutional/social mode of reasoning and prevalent social habits of thought in his writings refer to social rationality as the expression is here understood. In Veblen's scheme, therefore, social rationality (institutions) gives its tone to man's habit of thought. His behaviors are, in the last resort, shaped by social

rationality/social habits of thought (institutions). In juxtaposition, Schumpeter puts his own definition of rationality as follows:

Rational thought or behavior . . . imply . . . only a slow though incessant widening of the sector of social life within which individuals or groups go about dealing with a given situation, first, by trying to make the best of it more or less—never wholly—according to their own lights; second, by doing so according to those rules of consistency which we call logic; and third, by doing so on assumptions which satisfy two conditions: that their number be a minimum and that every one of them be amenable to expression in terms of potential experience (Schumpeter 1950a [1942]: 122).

The origin of development of social rationality for Veblen and Schumpeter resides in endeavors of men oriented towards meeting their material and economic interests. To Veblen, habits of thought of the community are shaped in the process of acquiring livelihood through technological devices that men use. Here, the central point for Veblen is technical action of man and technology itself in shaping community's material framework and social rationality.

[I]ndustrial use and wont . . . go to make up any given phase of civilization . . . [I]n the growth of culture, as in its current maintenance, the facts of technological use and wont are fundamental and definitive, in the sense that they underlie and condition the scope and method of civilization in other than the technological respect (Veblen 1946 [1914]: vii).

Similarly, Schumpeter considers 'economic pattern' as the main factor of social rationality.

[T]he rational attitude presumably forced itself on the human mind primarily from economic necessity; it is the everyday economic task to which we as a race owe our elementary training in rational thought and behavior—I have no hesitation in saying that all logic is derived from the pattern of the economic decision or, to use a pet phrase of mine, that the economic pattern is the matrix of logic (Schumpeter 1950a [1942]: 122-123).

However, given that Schumpeter's main intention is to display the origin of capitalist rationality, the 'economic pattern' he speaks of in effect proves to be of a very limited meaning. He sees the origin of capitalist rationality as the current civilization's 'economic pattern' organized on business affairs. As pointed out, Schumpeter treats technology as a commodity with a price in business life. The economic-institutional pattern and contemporary social rationality is, for him, the result of innovative activities of entrepreneurs with an eye to gaining profit. To him, this forms capitalist rationality. Indeed, this rationality is business rationality since capitalism, above all, is a business order. In this sense what Schumpeter wants to imply with 'economic pattern' is business order, instead of material organization of productive forces, namely, the order of 'the state of the industrial arts'. As such, from Veblen's point of view, rationality Schumpeter speaks of does not represent rationality peculiar to all classes of the community, but only of the businessmen. However, Schumpeter thinks of this capitalist cost-benefit consciousness as the prime social rationality in the current institutional order. He claims that the 'economic pattern' and culture of capitalism forms the whole structure of modern order, by supplying "the habits of mind" (1950a [1942]: 125-126). In other words, the process of capitalism, for Schumpeter, is spirit of current institutional scheme, even of technology and

modern science. He writes, “rising capitalism produced not only the mental attitude of modern science . . . but also the men and the means” (1950a [1942]: 124). He goes so far as to say that all aspects of ‘modern civilization’ is the product of capitalism.

Not only the modern mechanized plant and the volume of the output that pours forth from it, not only modern technology and economic organization, but all the features and achievements of modern civilization are, directly or indirectly, the products of the capitalist process (Schumpeter 1950a [1942]: 125).

On the other hand, Veblen sets forth two prime movers of modern institutional order that are at odds with each. These are ‘machine industry’ and ‘business enterprise’.

T[he material framework] of modern civilization is the industrial system and the directing force which animates this framework is business enterprise. To a greater extent than any other known phase of culture, modern Christendom takes its complexion from its economic organization. This modern economic organization is the ‘capitalist system’ or ‘modern industrial system’, so called. Its characteristic features, and at the same time the forces by virtue of which it dominates modern culture, are the machine process and investment for a profit (Veblen 1958 [1904]: 7).

Therefore, for Veblen, modern order is not solely the result of capitalist business process as Schumpeter avers, but with it he counts the process of machine industry as the other factor. While for Schumpeter industry and business are one and the same thing and do not involve a contradiction, for Veblen they correspond to two different social habits of thought or rationality. As pointed out,

these are pecuniary habitual thinking peculiar to capitalist classes and habits of thought intrinsic to industrial classes who perceive facts in terms of material cause an effect and tangible performance. This dichotomy of business or capitalist rationality and industrial rationality is at the center of modern institutional order for Veblen. Therefore, while Schumpeter speaks of only capitalist rationality, Veblen deals with both ‘machine-induced rationality’ (Tilman 2004) and capitalist business rationality.

[T]he everyday life of those classes which are engaged in business differs materially in the respect cited from the life of the classes engaged in industry proper. There is an appreciable and widening difference between the habits of life of the two classes . . . It induces a difference in the habits of thought and habitual grounds and methods of *reasoning* resorted to by each classes . . . So that the two classes come to have an increasing difficulty in *understanding* one another and appreciating one another’s *convictions, ideals, capacities and shortcomings* (Veblen 1958 [1904]: 151, emphasis added).

Schumpeter examines three aspects and consequences of capitalist rationality on the community’s habits of thought. The first one deals with *economic rationality* that forms behavioral *nature* of *economic* agent in capitalism defined above; second is concerned with the process of ‘creative destruction’ that generates social rationality; third with philosophical meaning of rationality. Now, we will focus on these themes in comparison with Veblen’s approach to the same matters.

First, Schumpeter gives the case of ensuing of ‘double-entry bookkeeping’ (Schumpeter 1950a [1942]: 123) as the first outstanding example

of developed capitalist rationality and suggests that this capitalist rationality develops rational calculation of economic agent. Schumpeter, therefore, exalts capitalist rationality due to the fact that it develops “problem-solving reason” (Reisman 2004: 191) concerning business affairs. In other words, Schumpeter conceptualizes human nature in capitalism as having a cost-benefit consciousness and a utility function in every economic case. Indeed, from Veblen’s point of view capitalist rationality Schumpeter speaks of is imposed upon individuals by pecuniary institutions and Schumpeter contemplates man as, in Veblen’s phrase, a “lightning calculator of pleasure and pains” (Veblen 1898: 389).

Capitalist practice turns the unit of money into a tool of rational cost-profit calculations, of which the towering monument is double-entry bookkeeping . . . [P]rimarily a product of the evolution of economic rationality, the cost-profit calculus in turn reacts upon that rationality; by crystallizing and defining numerically, it powerfully propels the logic of enterprise. And thus defined and quantified for the economic sector, this type of logic or attitude or method then starts upon its conqueror’s career subjugating—rationalizing—man’s tools and philosophies, . . . his picture of cosmos, his outlook on life, everything in fact including his concepts of beauty and justice and his spiritual ambitions (Schumpeter 1950a [1942]: 123-124).

In juxtaposition, Veblen starts his institutional theory by criticizing the hedonistic conceptualization of man and the supposed rationalism of *homo economicus* in orthodox economics. Veblen rejects that man behaves in the opinion of “instant rational calculations of the optimal solution in each and every case as they encounter it” and according to “a given utility function or pleasure - pain calculus” (Rutherford 1994: 57). Man, being an active agent in social scene,

does not have a hedonistic nature. On the other hand, Schumpeter claims in *Capitalism, Socialism, and Democracy* (1950a [1942]) this hedonistic rationality or ‘problem-solving calculativeness’ (Reisman 2004: 192) is the common social rationality of the capitalist society. For him, it has strong influence upon individuals. So much so that it shapes the world-outlooks of each individual in the community. As such, by considering rationality as the equivalent of ‘calculativeness’ reasoning that has a chief role in the economic/business realm, Schumpeter reduces social rationality to individualized intellect. At bottom, this opinion of Schumpeter stems from his belief in the power of economic base without other cultural effects over logic, rationality or habits. Conversely, for Veblen who sees economic base as embodied in social or institutional order, under no condition would man ever come to act according to ‘rational hedonistic calculation’ (Veblen 1909: 635). His behavioral patterns are shaped by not merely economic rationalization but also by institutional/social rationality that is formed by all cultural and social elements tracing back to past experiences of the community. What is more, man, from the standpoint of Veblen, can act irrationally according to the premises of rational calculation, and yet he cannot be rated as irrational. Since the rationality in question, being embedded in capitalist culture, is not a fundamental part of human nature, but of only pecuniary institutions or of, in his words, ‘businesslike imbecility’ (1964a [1923]: 360). From Veblen’s standpoint, in effect, Schumpeter denotes only business state of mind which is at variance with technological and industrial phenomena due to its value system resting upon pecuniary phenomena. As things turn out, while Schumpeter speaks of capitalist social rationality as developing man’s intellectual

capabilities concerning optimization and quantitative precision as to pecuniary issues, Veblen speaks of it as unacceptable from the moralist standpoint.

The concept of rationality in Veblen's and Schumpeter's theories can be portrayed visibly by elaborating their perception of capitalist civilization. As far as Schumpeter is concerned, capitalist civilization can be imagined as a house with three floors in which three kinds of agents live in each. In this triple house, *homo economicus* live at the first layer. Upon them, in the second floor, capitalists or bankers that supply financial means reside in. And, entrepreneurs are located in the top of it. For Schumpeter, the first and second layers together point out the material and economic life of the civilization and the third floor is the space that the heart of the civilization beats. On the other hand, for Veblen, the second and third floors together constitute the realm of the civilization in which finance and business affairs are made, which are, if anything, detrimental to material welfare of common men who live in the foundation of the civilization. In this sense, from the standpoint of Veblen, we can envisage capitalist civilization as forming a house with two floors, the top of which is finance/business capitalism, and the foundation is material life outside the financial/business capitalism. What is more, Veblen thinks of common men as excluded from the economic rationality of *homo economicus*. Their line of reasoning is at odds with that of Schumpeter's inhabitants living in this floor. At this point, for Schumpeter, there is a vital point to be mentioned. The economic rationality Schumpeter speaks of points out that man acts according to cost-benefit conscious choice making without assuming risks. Individuals with

economic rationality at the foundation of the civilization want to meet and maximize their economic interests without facing uncertainty. On the other hand, entrepreneurs' innovative activities and their choices involve risks and bear uncertainty. Yet, for him, this risk is not a pecuniary risk because it belongs to only capitalists. The only risk for entrepreneurs is to be wiped out in the process of social and capitalist development, which means moving out from the third floor, so to speak. For Schumpeter, entrepreneurs, unlike *homo economicus* with economic rationality, in the process of innovation have motives far behind economic consciousness. In Schumpeter's setup, the third layer in which entrepreneurs live is the place in which social rationality is created. Here, Schumpeter separates individualized intellect relied on cost-benefit conscious choice making related to economic matters from social rationality. To him, social rationality comes out in the process of 'creative destruction' proceeded on new technical possibilities within the business realm by entrepreneurs. In a sense, entrepreneurs, in Schumpeter's world, are the creators of the civilization and its social rationality. Veblen, to be precise, objects to this. In addition, there is another vital issue about the generating of social rationality in their different perceptions of civilization, that is, its process. To put it differently, from Schumpeter's point of view, the social rationality of capitalist civilization, as pointed out, is the outcome of the process of 'creative destruction' that comes off through successive sharp breaks with the past technological trajectories. In this sense, the creation of social rationality of capitalism is dependent upon *discrete* technical process. In line with these sentiments, we come to the second aspect of capitalist rationality that Schumpeter posits and therefore the disagreement of

Veblen and Schumpeter on the process of social rationality. Schumpeter sees the development of capitalist rationality as dependent upon man's, particularly, entrepreneurs' propensity oriented towards creating *constantly* new social and economic phenomena. As such, for Schumpeter, apart from the economic rationality of *homo economicus* with cost-benefit consciousness, being rational also amounts to seeking always for new (technological) purposes and to being engaged in entrepreneur-like activities.

[C]onscious rationality enters much more into the carrying out of new plans, which themselves have to be worked out before they can be acted upon, than into the mere running of an established business, which is largely a matter of routine. And the typical entrepreneur is more self-centered than other types, because he realizes less than they do on tradition and connection and because his characteristic task — theoretically as well as historically — consists precisely in breaking up old, and creating new, tradition (Schumpeter 1961 [1934]: 91-92).

In contradistinction to Schumpeter, this is the very thing that Veblen is opposed to. In much of his writings Veblen discusses not only man dealing with creating new technical patterns but also man acting through past or ceremonial habits holding out against new lines of reasoning. Veblen concretely treats this case in examining German and Japanese industrialization realized by building upon their dynastic institutional orders and older rationalities without undermining their institutional 'bases'. As such, economic development as the result of new technical possibilities, for Veblen, need not stimulate institutional development and a new rationalization immediately. From Veblen's point of view, man can be an active element in social and economic sphere who is

searching for new patterns in social and economic life and can be “norm -guided” or “rule guided” (Rutherford 1994) who adopts himself to the old habits. Since “institutional rationality . . . requires two types of thinking, one which produces rule-following behaviors and one which produces purpose-seeking behaviors” (Redmond 2004: 177). Rutherford (1994) from the Veblenian-institutionalist point of view states:

Rationalist explanations . . . need not be maximizing in nature. Most orthodox economics interprets rationality in maximizing or optimizing terms . . . Rationality, however, can also be interpreted in adaptive terms. Adaptive rationality still involves an evolution and decision on the basis of the consequences of alternative courses of action but it is less demanding of informational and cognitive requirements (Rutherford 1994: 55).

At this stage, it should be noted that this does not assume a contradiction in the conceptualization of human nature. Man in Veblen’s theory whether as ‘purpose-seeking’ or ‘rule-guided’ is always an active agent in the social scene. Since, being active for Veblen does not involve solely the nature of ‘purpose-seeking’ but also corresponds to being always a determinant part of social life.

Thirdly, Schumpeter defines capitalist rationality in the philosophical sense as thinking empirically or non-metaphysically in Weberian and Kantian sense (Schumpeter 1961 [1934]: 57n). In fact, this description is close to Veblen’s approach to scientific rationality. They share the same view on modern social rationality, though they define differently what it is. In Veblen’s words, it “throws out anthropomorphic habits of thought” (Veblen 1958 [1904]: 148). For Veblen, machine process stimulates that kind of social rationality. On the other

hand, according to Schumpeter, ceremonial, metaphysical and sentimental habits of thought are eliminated by capitalist rationality. He writes: “The capitalist process rationalizes behavior and ideas and by so doing chases from our mind, along with metaphysical belief, mystic and romantic ideas of all sorts” (Schumpeter 1950a [1942]: 127). Elsewhere he writes in the same manner as follows: “[C]apitalist activity, being essentially ‘rational’, tends to spread rational habits of mind and to destroy . . . those habits of super- and subordination that are nevertheless essential” (1950b: 448). Likewise, in another statement, he repeats his emphatic opinion about this issue: “Capitalist civilization is a rationalist civilization. It tends to eliminate extra- or hyperrational sanctions and habits of mind without which no society can exist” (1951b [1943]: 176). Therefore, Veblen and Schumpeter come close in defining scientific rationality in a non-metaphysical sense. Yet, while Veblen thinks of non-metaphysical rationalization as deriving from “machine -induced rationality” (Tilman 2004), Schumpeter sees it as residing in capitalist process and as an outcome of capitalist rationality. Theoretically, these two kinds of rationalization or mode of thinking in their social theories underlie their fundamental disagreement about the matters now in order.

4.2. Technology and Change

Both Veblen and Schumpeter are occupied with developing a theory of social and economic change in the long run. Since Schumpeter is concerned, for the most part, with technology within the context of economic phenomena, particularly within business (or commercial) framework, Veblen’s theory in

which technology is examined from economic, historical, sociological, anthropological as well as even psychological point of view proves to be a more complex structure in comparison with that of Schumpeter. First of all, we need to clarify what change amounts to in Veblen and Schumpeter's system. Both Veblen and Schumpeter deal with the question of how existent institutional and economic system changes. Schumpeter's chief concern is to show the mechanism of *economic change* in the order of capitalist economy in *The Theory of Economic Development* (1961 [1934]) within a pure theoretical model. In that book he develops his fundamental ideas concerning capitalist economic motion. In *Business Cycles* (1939) he does not add new ideas to his theory of technical change except defining innovation as a shift in production function (Schumpeter 1939: 87), which is in contradiction with his original definition that included also commercial and managerial aspects of technical change. Furthermore, he expands his approach to technology as having historical and statistical dimension by using Kondratieff, Juglar, and Kitchin cycles. On the other hand, in his later book *Capitalism, Socialism, and Democracy* (1950a [1942]), Schumpeter shifts his attention from the mechanism of *economic change* in capitalist system to the mechanism of *institutional change* of capitalism by considering techno-economic paradigm in 'managed' capitalism along with the other macro institutional effects. In that book the most vital change in his considerations arises from the fact that he shifts his focus from individualistic entrepreneur as the agent of innovative/technical change in competitive capitalism within a *theoretical* model to the *reality* of collective action in technological improvements embodied in professional teams under big concerns. Like Schumpeter in *Capitalism,*

Socialism, and Democracy (1950a [1942]), throughout his life span, Veblen was also pursued an effort to reveal the dynamics of institutional/social change of western civilization by way of the ages-long historical dichotomy between technology (technical reason) and institutions (ceremonial reason). Yet, Veblen, like Schumpeter, is mainly interested in the evolution of capitalism.

Veblen and Schumpeter recognize technological development to be the most effective inner dynamics in social and economic change. It should be noted that technology in their theories is only one of the factors, yet, as pointed out, the most powerful factor on the way to change. As Schumpeter writes, “[t]he process of social life is a function of so many variables” (Schumpeter 1950a [1942]: 61). This is also true for Veblen. Both of them agree that technology forces the existent economic and social/institutional order into new channels. And yet, there are numerous points on which they disagree. They are opposed to each other as regards primarily the definition of technology, the form of handling technology, and the process of technological improvement. We can treat their differences under above headings.

To begin with, according to Veblen, technology ‘is one of the cultural phenomena” and “a social process” (Veblen 1946 [1914]: 103). He defines technology—or, equivalently the state of the industrial art—as “a joint stock of knowledge derived from past experience, and is held and passes on as an indivisible possession of the community at large” (2001 [1921]: 19). Technological improvement cannot be realized by “individual or private initiative or innovation” (1946 [1914]: 103). As such, technological advance is dependent

upon collective technical action of the community. To put it in his words, technological advance ‘is an affair of the collectivity, not a creative achievement of individuals’ (1946 [1914]: 103). In opposition to Veblen, as emphasized above, Schumpeter treats technology as one of the business affairs of businessmen. For him, innovative/technological change, being ‘an *internal* factor[,] . . . is a purely economic process and . . . purely a matter of business behavior’ (Schumpeter 1939: 86). To Schumpeter, making innovation is a commercial ‘enterprise’, and those whose function is to realize innovations are ‘entrepreneurs’ (1961 [1934]: 74). All economic/business activities that set in motion economic development in capitalism rely on the carrying out of new combinations/innovations,—specifically, “new methods of production . . . new commodities . . . new forms of organization—the merger movement³¹ . . . new sources of supply . . . new trade routes and markets to sell” (1950a [1942]: 68). Incidentally, since Schumpeter sees technological advance as only the result of innovations by entrepreneurs with an eye to gaining profit, he excludes inventions

³¹ Schumpeter recognizes ‘merger movements’ of corporations as an innovative activity of entrepreneurs. He assumes that they are merging with an eye to making innovations in more efficient ways. To Schumpeter, one of the most important impediments on the way of making innovations is competition due to its tendency to lead to waste resources. In this sense, merging, by constituting a monopoly power, paves the way for *rational* use of resources. The main argument here lies in Schumpeter’s opinion that in capitalist economy the competition type is not price competition but innovation competition between rival corporations. He writes: “[I]n capitalist reality . . . it is not . . . [price] competition which counts but the competition from the new commodity, the new technology, the new source of supply, the new type of organization . . . This kind of competition is as much more effective than the other as a bombardment is in comparison with forcing a door” (Schumpeter 1950a [1942]: 84). Neglecting this fact, for Schumpeter, is as much as playing “*Hamlet* without the Danish prince” (1950a [1942]: 86), in a manner of speaking. On the other hand, according to Veblen, the competition type peculiar to capitalism is price competition between rival business enterprises. Their mainstay of profits is high prices instead of making innovations, for the most part. The higher the prices, the higher the profits. They merge with each other from time to time in order to prevent the decline and manipulate prices due to price competition. In this sense, ‘the merger movement’ or to use Veblen’s own words ‘coalition of vested interests’ (Veblen 2001 [1921]: 78) does not generate an industrial serviceability. As a result, for Veblen, in contradistinction to Schumpeter, there is no competition for innovations, but solely a cutthroat competition for profit and prices which at the same time thwarts the new technical improvements.

from his theory of technical change, by considering it to be an exogenous variable in the process of economic evolution due to its non-business nature. To put it differently, he contemplates innovations and, therefore, technical advance that leads to economic and institutional change as deriving from inventions for the purpose of pecuniary gains. On the other hand, for Veblen, technology contains invention as an endogenous factor to shape the process of institutional and economic change. To Veblen, “the work of the inventor who devises the appliances of the [machine] process and that of the mechanician who puts the inventions into effect and oversees their working” are the constituent of the “modern machine process” as well as “modern business” process (Veblen 1958 [1904]: 9). As a result, the second difference with regard to technology in Veblen and Schumpeter’s theory manifests itself. While Schumpeter handles technology as a business expedient, for Veblen, the technology is, and *ought to be*, a means of community in the process of fulfilling its *material* interests.

In Schumpeter’s estimation, (machine) technology is an economic good with a price in the gyration of business cycles. As time goes and therefore technology becomes worn out, its price declines. For Schumpeter, technology and business, and business prosperity and material welfare are one and the same thing. However, for Veblen, business and technology represent two kinds of habits of thought, employments in industrial realm, interests and purposes at odds with each other in every respect. In Schumpeter’s world, the value of technological improvements is counted according to pecuniary terms. Though successive economic waves are generated by new technical possibilities, it is their

price movements that shape the character of economic development/change. As such, the level of prosperity and depression of community is counted by pecuniary values. In this sense, while prosperity reflects high rate of profit, depression amounts to declining price, business capitalization and volume of credit expansion. Therefore, prosperity means business prosperity in Schumpeter's system. Indeed, on the part of Schumpeter, prosperity means maximum technological and therefore industrial and investment goods production, since he sees the source of profit as an outcome of new technical possibilities. Yet, from Veblen's point of view, under the sway of corporate finance capitalism, profit flows from high prices, for the most part, instead of technological improvements. In reality, both Veblen and Schumpeter write at a time when profits deriving from material/technological expansion were less than profits from commercial and financial affairs that are of no relevance to the material welfare of the community. Veblen writes by considering this fact, but Schumpeter does not. Much as Schumpeter's focus on technological phenomena changes from time to time, yet this basic point holds. For Veblen, pecuniary productivity does not mean technological/industrial productivity. As in Schumpeter's theory, profit belongs to businessman/entrepreneur, and as such, it cannot be an expedient of determining the prosperity of the underlying population. Bad or good times of community can be, and *ought to be*, determined by only the amount of output as was the case in the past. As a last word concerning this issue, indeed, Schumpeter who considers technology as an economic good speaks of a *reified* technology that does not have social tropism. This stems from the fact that common man has become alienated from

technological facts in capitalism through business considerations. This fact cannot be denied for the time concerned. Yet, from Veblen's point of view, as emphasized, in the long run (machine) technology cannot go hand in hand with business.

Finally, Veblen and Schumpeter conceive the nature of technological change in two opposite ways. However, both do not present a clear-cut explanation as to the origin of technological process in the technical sense. Especially Schumpeter comes in for criticism for not being interested in it; for this reason, it is claimed that his theory cannot be a theory of technical change. Schumpeter treats the origin of technological change within a business/commercial context by envisaging technological process as depending upon entrepreneurs and firms' behaviors, and credit mechanism. By the same token, Veblen does not approach the process of technical change technically. Yet, to some extent Veblen deals with this matter from social scientific point of view, though not technically. He aims at revealing the origin of man's technical action by illustrating his natural tendency to technological affairs that he calls 'the instinct of workmanship'. He treats this in anthropological, psychological, and sociological as well as a philosophical sense. Though they are not interested in the process of technological change in the technical sense, they have a deep interest in the consequences of technology on economic and social life.

Veblen and Schumpeter suggest two alternate descriptions for the process of technical change. In his writings Schumpeter does not address the cumulative nature of technology. He considers innovations as discontinuous technological

improvements. At this stage, it should be noted that Schumpeter aims at making a characterization of technological process peculiar to capitalism. He implies that capitalist economic development is dependent upon discontinuous way of technical advance. He sets forth the fundamental nature of capitalism as follows: “What has been done already has the sharp-edged reality of all the things which we have seen and experienced; the new is only the figment of our imagination. Carrying out a new plan and acting according to a customary one are things as different as making a road and walking along it” (Schumpeter 1961 [1934]: 85). This unequivocal statement represents, in effect, all aspects of capitalist life, not only technical process, on the part of Schumpeter, as pointed out earlier. In reality, whether in capitalism or in any other system, that technology or any other social process leads to a ‘new order of things’ does not assume a sharp break with the past. Veblen writes: “In so speaking of a ‘New Order of Things’ there is no intention to imply that the new is divided from the old by a catastrophic break of continuity” (Veblen 1964a [1923]: 231). More specifically, in his scheme, in opposition to Schumpeter, technology, being of cumulative and social character, proceeds on past technical experiences, and any new technical possibility is the result not of “a series of great inventions that precipitately burst upon the scenes” (Basalla 1998: 26). To Veblen, technological change “is always in process of change” cumulatively and is “held and carried forward collectively” (Veblen 1946 [1914]: 103). Joseph Needham’s (1970) phrase concerning the initial technical improvement of capitalism summarizes neatly Veblen’s approach: “No single man was ‘the father of steam engine’; no single civilization either” (Needham 1970: 202).

Therefore, in line with these sentiments, Veblen and Schumpeter, who think that change is the essence of the order of things, bring two descriptions to the process of technical and social change. Schumpeter defines ‘the essence of capitalism’ as ‘creative destruction’ (Schumpeter 1950a [1942]: 104n). Correspondingly, for Veblen, ‘modern culture is creative’ (Veblen 1961a [1919]: 2). However, as emphasized above, in Schumpeter’s view, the process of ‘creative destruction’ proceeds on the sharp breaks with the past social experiences and events and, especially, with technological trajectories. Nevertheless, the phrase by Schumpeter, ‘creative destruction’, denoting the revolutionary character of capitalism, can be related to the *iconoclastic* nature of technology in Veblen’s estimation, yet with a vital exception. As already emphasized, for Veblen, technology is to eventually shake up the existent institutional order by creating new patterns of livelihood, and in turn novel social organizations and relations. Yet, this process does not proceed on a sharp ontological break with the past, but comes about in ‘cumulative causation’. Every social phenomena comes into the scene in ‘the sequence of events’. Veblen evaluates technological and institutional change under the motto of ‘cumulative causation’. To him, present ‘technological paradigm’ (Dosi 1982) is the reason of the next and the outcome of the former. In this sense, we can consider ‘creative destruction’ only within the broader context of iconoclastic nature of technology in the process of ‘cumulative causation’ in the long run, on the part of Veblen. In dealing with process, they represent two alternative insights of technological development.

4.3. Veblen's Common Man and Schumpeter's Entrepreneur

In contradistinction to conceptualization of man as a passive agent in classical theory due to its metaphysical organon, Veblen and Schumpeter hold social change to be a *volitional* process contingent on human deeds in social and economic realm. As such, they conceive human to have an active role in the social/institutional and economic evolution. Nevertheless, the agent of change is different in their theories. Schumpeter considers economic development as dependent upon entrepreneurial actions oriented towards generating new technical possibilities with an eye to gaining profit through financial means. Therefore, his protagonist is 'entrepreneur' in motion. To state in his words, "[t]he 'entrepreneur' is merely the bearer of the mechanism of change" (Schumpeter 1961 [1934]: 61n). In juxtaposition, Veblen recognizes 'common man' as the subject of institutional change. By 'common man', Veblen means man who does not possess the mechanical equipments in favour of his self-interest, nor holds a pecuniary interest in the material welfare of the community (Veblen 1994b [1917]: 151), but who participates in technical action realized collectively to augment the material interest of the underlying population, and whose peaceable instincts, particularly the instinct of workmanship, outweigh the predatory propensities intrinsic to human nature. For Veblen, entrepreneur, far from being the subject of institutional change, is the product of ceremonial reason that contemplates technology as a business expedient and who thwarts technological progress for his pecuniary aims. On the other hand, common man under the pecuniary traffic of business comes into scene as a raw material of

business affairs, as it were, or consumer or laborer (1994b [1917]: 156). Thus, Veblen's protagonist is the common man whose actions are oriented towards making better material life within social collectivity by means of generating new tools, technologies, and innovations. Within his theory, in the era of machine process he imagines common man under various groups of technical occupations, yet his characterization concerning his propensities never changes.

In dealing with the role of entrepreneur in technological process in the capitalist system of the twentieth century from Veblen's and Schumpeter's points of view, we are once again faced with alternative approaches. It is Schumpeter's basic vision that entrepreneur is an innovator and must be rated only as a technological agent. His primary target is to carry out new combinations. He is not a constituent of capitalist class. Entrepreneurs and capitalists, that is, most notably bankers, corresponding to different efficacy for technological development, keep in touch only around exchange of money in the process of innovation, namely, credit from bankers to entrepreneurs and interest payments from entrepreneurs to bankers. However, the value system of entrepreneurs is derived from that of the bourgeois class. Another differentiation in two types in Schumpeter's world is that entrepreneurship is not a profession, nor refers to a social class like the capitalist class (Schumpeter 1950a [1942]: 134; 1961 [1934]: 78). It is only a special kind of leadership and a creative factor in the innovation process. The only function of him is "getting things done" and turning them into "an untried technological possibility" (1950a [1942]: 132). Whoever performs this function becomes an entrepreneur for the time being in Schumpeter's view.

As things turned out, Schumpeter identifies entrepreneurship as having something of the instinct of workmanship like the common man of Veblen, though Veblen would not agree. This point brings us to their fundamental disagreement about the function of entrepreneur in the modern capitalist system.

As already pointed out, Schumpeter evaluates entrepreneurship and technological phenomena in a 'business' or 'commercial' context. Yet, he does not use the term 'businessman' to refer to entrepreneur. Ferrarotti (1999) displays three conceptualizations of being businessman widely accepted as follows: Businessman can point to "1) the capitalist, or owner of capital; 2) the entrepreneur, or man of ideas who seeks profit through productive innovation; and 3) the professional manager, or functionally responsible administrator" (1999: 244). Needless to say, of these three, being businessman for Schumpeter indicates the very second type, namely, being entrepreneur or innovator. In contrast, for Veblen, businessman corresponds not only to 'the owner of capital' and 'the professional manager' but also to 'entrepreneur', yet not in the positive sense of innovator. The characterization of entrepreneur by Veblen and Schumpeter is very much at variance with each other. First of all, it is the sharp distinction concerning the function of entrepreneur in Veblen's and Schumpeter's theories that for Veblen entrepreneur is the epitome of businessman who deals with pecuniary employments and with increasing his money income, for the most part, rather than with enhancing productive capacity of industry through innovations.

As things turned out, by entrepreneur they speak of a different social agent in terms of his role and the consequences of his pecuniary aims in technological process. Thus, at this stage, we must elaborate what entrepreneurship corresponds to in Schumpeter's and Veblen's setups. To that end, we will look at the evolution of entrepreneurship in the period from the eighteenth to the twentieth century. Veblen illustrates the development of businessman in specific terms. He makes an earnest effort to signify the propensities of entrepreneur of the eighteenth century and that of the era of finance capitalism in the twentieth century. He calls the former type of entrepreneur 'captain of industry' and the latter 'captain of finance', which are quite different in terms of their tasks in the economic realm. The era of the captain of industry starts with the advent of the Industrial Revolution in the eighteenth century and ends up with the growth of corporate finance towards the end of the nineteenth century (Veblen 1964a [1923]: 102). Veblen suggests that he deals with as much business management side of the industrial system, namely, 'pecuniary employments' as 'industrial employments' that reside in 'technical insight'. To some extent, even business considerations of the captain of industry in the eighteenth century were still being conducted with a view to affording a livelihood through new technical possibilities. In his words, the captain of industry, his origin traceable back to the 'merchant adventurer' (1964a [1923]: 102),

was a person of insight—perhaps chiefly industrial insight—and of initiative and energy, who was able to see something of the industrial reach and drive of that new mechanical technology that was finding its way into the

industries, and who went about to contrive ways and means of turning these technological resources to new uses and a larger efficiency; always with a view to his own again from turning out a more serviceable product with greater expedition. He was a captain of workmanship at the same time that he was a business man; but he was a good deal of a pioneer in both respects, inasmuch as he was on new ground in both respects (Veblen 1964a [1923]: 102-103).

In ensuing lines Veblen defines ‘the captain of industry’ as a ‘great tool - builder’ (1964a [1923]: 103). At bottom, this type of entrepreneur who is of both commercial and technological nature is the very sort that Schumpeter defines. Yet, in Veblen’s scheme, with the rise of corporate finance capitalism towards the late nineteenth century, ‘the captain of finance’ who is concerned exclusively with financial aspirations instead of ‘industrial employments’ and technological affairs replaced him. As such, to Veblen, businessman of the late era of machine process is substantially different from his precedent type in the eighteenth and nineteenth century. Since with the advent of machine technology and as the scope of the business side of industry expanded, ‘the captain of industry’ was increasingly removed from technological employments of the industrial system. It followed that they became more occupied with financial ends instead of with enhancing productive capacity of the industry by way of carrying out innovations. In due course, the eighteenth and nineteenth century businessman, namely, ‘the captain of industry’, has given place ‘the captain of finance’. The apex of this process is a sharp demarcation between the ownership of the industrial equipments and their financial management as a result of the businessmen’s grave attention to financial ends. Therefore, financial management has been

handed over to ‘the investment bankers’ that Veblen also calls ‘the absentee owners’; the most outstanding part of ‘the vested interests’ and the last type of businessman in the era of corporate finance capitalism, who control all mechanisms of the credit system through which they subjugate the captains of industry and, therefore, industry, to their financial ends. As a result, businessmen have been displaced from the industrial occupations; their only linkage with industry remains to be based upon pecuniary affairs such as buying and selling securities, bonds, supplying credit, realizing profit and so on. ‘[I]n short, men more nearly on the order of safe and sane business” (1964a [1923]: 109). At present, these absentee owners, being the new face of capitalist class, constituted the managerial class of capitalism. Twentieth century is the era of financier managerial classes which replaced the individualist capitalists of the eighteenth and nineteenth century. ‘This committee performed its function by ‘managing the managers’ of the new corporate structure; meanwhile, the remaining capitalists simply lavish incomes derived from only ownership alone” (Hunt 2003: 155-156). Consequently, in the wake of corporate finance capitalism, all relations in industrial system have gained a new dimension. Veblen sketches the essence of this process as follows:

Since the modern era began, the state of the industrial arts has been undergoing a change of type, such as the followers of Mendel would call a ‘mutation’. And in the course of this mutation the workman and his part in the conduct of industry have suffered as great a dislocation as any of the other factors involved. But it is also to be admitted that the typical owner-employer of the earlier modern time, such as he stood in the mind’s eye of the eighteenth century doctrinaires, — this traditional owner-employer has also come through the period of the

mutation in a scarcely better state of preservation . . . [H]e could still truthfully be spoken of as a 'master', a foreman of the shop . . . The personal employer-owner has virtually disappeared from the great industries. His place is now filled by a list of corporation securities and a staff of corporation officials and employees who exercise a limited discretion (Veblen 1964a [1923]: 40, 43).

From Veblen's standpoint, therefore, entrepreneur that Schumpeter describes has withdrawn from the social and economic scene. According to Veblen, entrepreneur of the twentieth century is a "financial manager" (2001 [1921]: 20). He states that entrepreneur is the new name of businessman in current economic theory "who takes care of the financial end of things" (2001 [1921]: 20). In Veblen's eye, entrepreneur, far from being a productive force as counted in orthodox economics along with labor, capital and land, is no less a person than "corporation financier" (2001 [1921]: 20). He calls also entrepreneur "undertaker" and "speculator" (1958 [1904]: 25; 1901: 201). He writes, "the speculator . . . deals with exclusively with the business side of economic life rather than with the industrial side . . . His traffic is a pecuniary traffic, and it touches industry only remotely and uncertainly" (1901: 202). In this sense, entrepreneurs constitute the vested interests of country that have "a legitimate right to get something for nothing" (1964b [1919]: 161, 169). As a result, Veblen considers entrepreneur as a businessman who tends to deal solely with financial affairs and touches technological employments indirectly.

Both Schumpeter and Veblen wrote at a time when large corporations surpassed the individual capitalists and entrepreneurs in Schumpeter's sense. Monopoly powers gradually arrived at the center of twentieth century capitalism.

Under this ‘managed’ capitalism the capital accumulation has been consolidated in large corporations. As such, individualistic mode of capital accumulation has petered out. However, while Schumpeter puts an emphasis on the side of the *modus operandi* of managerial capitalism, Veblen deals in the main with finance capitalism. In fact, this stems from that management capitalism has grown in twenties and gained greater influence after Veblen’s death. Yet, Veblen is not ignorant of it entirely. In his later book *Capitalism, Socialism, and Democracy* (1950a [1942]) Schumpeter is well aware of the full-blown consequences of managerial capitalism to capitalist classes and entrepreneurs. By considering the new face of capitalism, he portrays the development of businessman like Veblen with an exception. That is to say, Schumpeter emphasizes the evolving of ‘the captain of industry’ into bureaucratic class instead of ‘corporation financier’.

[T]he modern businessman, whether entrepreneur or mere managing administrator, is of the executive type. From the logic of his position he acquires something of the psychology of the salaried employee working in a bureaucratic organization. Whether a stockholder or not, his will to fight and to hold on is not and cannot be what it was with the man who knew ownership and its responsibilities in the fullblooded sense of those words. His system of values and his conception of duty undergo a profound change (Schumpeter 1950a [1942]: 156).

Therefore, his approach becomes closer to that of Veblen in the sense that at present ‘the captain of industry’ is not the social actor in the technological and industrial realm. In Veblen’s estimation, as pointed out, entrepreneur becomes ‘the captain of finance’ or ‘the captain of business’, and for Schumpeter, he is now the ‘captain’ of bureaucratic managerial capitalism. Yet, it should be noted

that the definition and function of entrepreneur as an agent of technological progress, for Schumpeter, did not change. In *Capitalism, Socialism, and Democracy* (1950a [1942]) he still denotes his function as carrying out innovations and thereby developing industrial system and his aim of pecuniary gain as the essential driving force of technological production. To put it differently, he still sees independent and individualistic entrepreneur as the agent of constant technological changes in capitalist motion; and therefore his *idée fixe* that entrepreneur as an underlying principle of capitalism is a technological agent apart from his commercial purposes is here to stay. Yet, under the 'managed' capitalism that has paved the way for routinized process of innovative activities in the large concerns under the responsibility of professional teams, with the demise of individual entrepreneurs, the fall of capitalism towards socialism resting upon the strict hierarchical bureaucratic order is inevitable.

Therefore, the basic disagreement of Veblen and Schumpeter concerning the function of entrepreneur in capitalism is now all the clearer. While Schumpeter describes entrepreneurs as those who 'get things done' to improve new technical possibilities, for Veblen they are the vested interests who 'get something for nothing'. From Veblen's point of view, the entrepreneur is incommensurate to ensure technological improvements. Therefore, with the captains of finance at the helm, things are sure to come to dysfunction in the technological realm. For Veblen, entrepreneurs are of the nature of technological unfitness, and in the twentieth century 'the captain of industry' that Schumpeter characterizes under the name of entrepreneur never appears on the scene. To

Veblen, his technological employments are delegated into another social actor, namely, 'efficiency engineer'. This is so because understanding of the system of machine technology is now far beyond the entrepreneurial abilities. Thus, in Veblen's view, entrepreneurial function concerning technological affairs becomes a function of engineers.

Indeed, the captains of industry have themselves latterly begun to recognize their own inefficiency in this respect . . . So, a professional class of 'efficiency engineers' is coming into action, whose duty it is to take invoice of the preventable wastes and inefficiencies due to the business management of industry and to present the case in such concrete and obvious terms of price and percentage as the businessmen in charge will be able to comprehend. These men, in a way, take over the functions assigned in economic theory to the 'entrepreneur'; in that they are men of general training and insight, who go into their inquiry on the ground of workmanship (Veblen 1946 [1914]: 222-223).

It should be noted that, in effect, Schumpeter also considers engineers at the Research and Development departments under large concerns as the bearer of technological process. However, to Schumpeter, technological process at the hands of these efficiency engineers has become a routinized process that excludes the revolutionary business objective of individual entrepreneurs. For Schumpeter, these business considerations related to technological process are the heart beats of capitalism, and excluding them from technological process leads to heart attack, which will result in the death of capitalism. Similarly, for Veblen, engineers are the dissenting social class for business capitalism due to their matter-of-fact habits of thought at odds with that of businessmen.

In short, Veblen and Schumpeter emphasize different types of businessman and entrepreneur. From Veblen's point of view, in the era of corporate finance capital, Schumpeter as a writer of the twentieth century focuses on the entrepreneur as 'the captains of industry' of the eighteenth and nineteenth century ensued in the wake of the British Industrial Revolution. In effect, this stems from his regarding material expansion phase of the nineteenth century capitalism as the central process, as will be made explicit in the ensuing lines, and therefore the initial assumptions of his theoretical model that can be traced back to the tenets of classical economy of the eighteenth and nineteenth century according to which entrepreneur is counted as the fourth productive factor. In this sense, for Veblen, Schumpeter, not considering the transition from the era of free competition to the era of corporate finance capitalism, commits a categorical fallacy by considering the previous type of businessman of 'handicraft era' and the early stage of machine process as the persistent technological agent, who indeed was actually removed out of his technological considerations. As a last word, while Veblen and Schumpeter recognize technological change as the driving force of all change, they differ concerning the social agent who plays an essential role in the fall of managerial finance capitalism. In the long run, for Veblen common man, and for Schumpeter entrepreneur, will have a vital role. Yet, while for Veblen it depends upon the growth of common man, on the part of Schumpeter, upon the demise of entrepreneur.

4.4. Credit in Technological Process

Money in bank-credit form in the process of industrial and technological development has a substantial place in Schumpeter's and Veblen's theories. Yet, their approaches are once again different from one another. While Schumpeter considers credit-money to be a chief means for industrial development, Veblen recognizes it as a means of 'sabotage' of industrial system and technological process as well as injurious overcapitalization. As pointed out in the last chapter (3.1.3.), according to Schumpeter, bank credit creation *ad hoc* is the only means, due to the absence of *ex ante* savings, that enables entrepreneurs to acquire the means of production for their innovative activities, which results in breaking off the steady 'circular flow' and in turn leads to capitalist development. In the same way, in the process of capitalist development, entrepreneurs continue their innovative activities through bank credit that results in technological advance. Within his pure theory Schumpeter declares that "[o]nly the entrepreneur, . . . in principle, needs credit; *only for industrial development does it play a fundamental part*" (Schumpeter 1961 [1934]: 105, emphasis added). What is of greater relevance here is that he takes for granted that money in bank-credit form to be a technical and neutral means in entrepreneur's hand in the sense that money performs only as to realizing industrial and technological development without any implicit aims or biases. In other words, from Schumpeter's point of view, credit-money performs as a mere exchange means that allows entrepreneurs, by giving them purchasing power, to buy investments means, namely, industrial

equipments. To be precise, credit-money, for Schumpeter, is fulfilled with goodwill toward industrial and technological development.

In juxtaposition, Veblen, unlike Schumpeter, recognizes credit-money as a means to disrupt the industrial system and of possession rather than a means of industrial and technological serviceability. For Veblen, investment bankers (absentee owners) as credit creators do not aim at enhancing industrial efficiency and therefore material welfare of the community but, by raising business volume through bank credit, pursue to swell their properties in terms of money value. He handles bank-credit as a controlling power over a country's industrial system lying in the discretion of the vested interests. He is sternly sensitive to its devastating consequences to industrial and technological life of the community. From this point, we can enter the analysis of Veblen concerning bank credit in comparison with that of Schumpeter.

While Schumpeter contemplates credit as benevolence for technological development, Veblen thinks of credit as being not much of a mean for it. Veblen states that credit does not "alter the character of the process employed" (Veblen 1958 [1904]: 52). This implies that credit does not afford the *process innovation* as Schumpeter claims, which is, of the five, the second type of innovation that Schumpeter defines (Schumpeter 1961 [1934]: 66). In contradistinction to Schumpeter, for Veblen, credit is a means of "fiscal administration" of industry and is a kind of "fiscal sabotage" (Veblen 1964a [1923]: 353) that reacts upon industrial serviceability as will encumber its productive work. To put it differently, credit, to Veblen, causes maldevelopment much less to serve as an

essential and healthy means for economic development. Since, the primary effect of credit extension is to increase prices resulting in paving the way for the speculative inflation of values of material equipments of industry and thereby raising “the price of living” (1964a [1923]: 395). As such, he sees credit as a ‘price-making factor’ (Veblen 1905) rather than an effectiveness-making factor, so to speak.

As emphasized, to Veblen, since businessmen’s gaining is realized by higher prices for the most part instead of increase in industrial capacity, they have to raise price level that leads to the inflation of the money value of their business. At this point, they resort to bank-credit as a means for this process. In this sense, Veblen suggests that credit serves to the benefit of businessmen, not industry and community, since the use of credit touches industry secondarily. As such, by so doing, through bank credit they raise prices of the material items and in turn money income. In effect, this process is the capitalization of money and it leads financial assets to be capitalized at the hands of businessmen. In other words, credit augments businessmen’s volume of money capital instead of material investment goods. For that reason, for Veblen, ‘credit extension has no aggregate industrial effect’ and as such does not ‘increase the technical (material) outfit of industry’ (1958 [1904]: 52, 53). As a result, credit expansion is so detrimental to industry and economic life of the community at large. Since it causes an unhealthy overcapitalization (unfair possession) as counted in terms of price, by manipulating all the values in the system.

Thus, according to Veblen, “credit is an expedient of business” (1905: 461), and as such, by its nature, it cannot give birth to healthy consequences to industrial and technological development. Businessmen resort to credit to swell the “rapidity” and “magnitude of turnover” (1958 [1904]: 50) let alone the efficiency of industrial system. And, as a result of increasing volume of business, credit turns into a “competitive weapon” (Homan 1968: 160) in their hands. Increase in the price level and unhealthy overcapitalization follows. He writes, “funds obtained on credit are applied to extend the business; competing business men bid up the material items of industrial equipment by the use of funds so obtained” (Veblen 1958 [1904]: 55). Thus, taken in the aggregate, credit enhances business capital and the volume of business affairs, not the volume of industrial production and the aggregate material equipment of industry, nor facilitates technological advance:

[A]ll advances made by banking houses or by other creditors in a like case . . . go to increase the ‘capital’ of which business men have the disposal; but for the material purposes of industry, taken in the aggregate, they are purely fictitious items . . . All these advances afford the borrower a differential advantage in bidding against other business men for the control and use of industrial process and materials, they afford him a differential advantage in the distribution of the material means of industry; but they constitute no aggregate addition to the material means of industry at large. *Funds of whatever character are a pecuniary fact, not an industrial one; they serve the distribution of the control of industry only, not its materially productive work*” (Veblen 1958 [1904]: 54, emphasis added).

To conclude, just as the differences in Veblen’s and Schumpeter’s approaches to technology, entrepreneurs and bankers, their views on the function

of bank credit are also at variance. While Schumpeter attributes a chief positive role to bankers in the process of technological and industrial development, for Veblen, investment bankers constitute the “general staff of the business community” that he calls also “one big union of the interests” (1964a [1923]: 340) that controls the credit mechanisms and therefore country’s material equipments for the pursuit of lucrative businesses rather than technological advance. As the “credit economy’ prevails” (1964a [1923]: 358), writes Veblen, “the livelihood of the underlying population becomes, in the language of mathematics, a function of the state of mind of the investment bankers, whose abiding precept is: When in doubt, don’t” (1964a [1923]: 361). In another statement, he writes in the same manner as while “capitalization and earnings are a business proposition; livelihood is not” (1964a [1923]: 220). Therefore, credit, means of innovations, and bankers, supplier of credits for innovations, in Schumpeter’s theory of development, become a means of ‘sabotage’ and of possession, overcapitalization in terms of money value, and the vested interests who “get something for nothing” (1964b [1919]: 169) in Veblen’s theory.

CHAPTER 5

CONCLUSION

In his book, *The Long Twentieth Century* (1994), Giovanni Arrighi, by taking Fernand Braudel's trilogy, *Capitalism and Civilization*, as departure point, explores the historical process of capitalism. In his analysis, Arrighi focuses on four capitalist state experiments and, by so doing, examines the structure of historical capitalist development. With his key concept of 'systemic cycle' or equivalently the process of 'capital accumulation' on a world scale, Arrighi presents us a historical and general review of capitalist development around these four capitalist states or 'systemic cycles'. These cycles are composed of, in his words,

[a] Genoese cycle, from the fifteenth to the early seventeenth centuries; a Dutch cycle, from the late sixteenth century through most of the eighteenth century; a British cycle, from the latter half of the eighteenth century through the early twentieth century; and a US cycle, which began in the late nineteenth century and has continued into the current phase of financial expansion (Arrighi 1994: 6).

Arrighi states that there are two phases of capitalist development in each cycle that follow one another. He observes that each cycle emerged out of firstly the phase of material expansion and demised with the phase of financial expansion. More clearly, each capitalist state at a point when profits flowing from

material expansion/production proved to be declining when they were invested in production for a second time, passed instead to the phase of financial expansion. In turn, capital accumulation proceeded on the basis of capitalization of financial assets. However, Arrighi denotes that this stage of financial expansion signs termination of hegemony of a particular state in world economy. Thereafter, the subsequent capitalist state in the phase of material expansion superseded previous hegemony by benefiting from financial expansion in its late times.

Given the above Arrighi thesis, we can analyze Veblen's and Schumpeter's approaches to technology. His thesis gives us an opportunity to show their fundamental disagreement on technological process in capitalism. Of much greater significance, it enables us to understand better how technological process performs in two different phases of capitalist development.

Schumpeter began to develop his theory of economic development in his *The Theory of Economic Development (Theorie der wirtschaftlichen Entwicklung)*, published in German in 1911. Veblen also put his fundamental ideas as regards capitalist development in his *The Theory of Business Enterprise* in 1904. Those years correspond to the fall of the British hegemony in world economy and the origins of US supremacy residing in material expansion/production. Also, those years coincide with a period when finance capitalism had deep effects upon social and economic realm. In this epoch, Veblen and Schumpeter perceived this period differently. While Veblen focused on finance capitalism and, therefore, financial expansion phase of capitalist development, Schumpeter takes material expansion phase as departure point for

his analysis of capitalist motion. To put it differently, while Schumpeter analyzes technological process peculiar to the material expansion phase, Veblen evaluates technological process in the financial expansion phase. In this respect, they present two alternate theories of technological process in capitalist development.

Schumpeter's handling capitalism, in effect, is reminiscent of that of Karl Polanyi. In his famous book, *The Great Transformation* (1957 [1944]), Polanyi suggests that, in contradistinction to Arrighi as well as Veblen, the nineteenth-century capitalism came into being with a immense break off the past as a result of the commodification of labour, land, and money which he calls as 'fictitious commodities'. To Polanyi, as different from Arrighi and Veblen, the nineteenth century was the beginning of capitalism as understood by the concept of market system. Schumpeter, like Polanyi, contemplates the nineteenth-century capitalism in which *sine qua non* institutions of capitalism, particularly, 'private property' and 'bourgeois values', emerged, as an unprecedented era that is of no resemblance to previous ages. In short, like Polanyi, Schumpeter too sees the rise of capitalism as a broken historical process. At bottom, the period that Schumpeter takes as starting point for his analysis of capitalist motion corresponds to the material expansion of the British cycle. As such, he treats capitalist development under the light of material expansion phase of the nineteenth-century capitalism, because, to him, capitalism without the institutional framework of that era does not refer to capitalism by definition. In this sense, he takes material expansion phase as normal, and as such, financial expansion phase as provisional.

In juxtaposition, in his transhistorical approach that is traceable back to even the Neolithic Era, Veblen considers all social and therefore technology-related phenomena as proceeding cumulatively in the “sequence of events” (Veblen 1898). As such, the nineteenth-century capitalism from his historical standpoint does not point out a break in the historical serial. Instead, for him, this *would-be* unprecedented epoch and its material expansion phase is temporary and exceptional. Furthermore, contra Schumpeter, Veblen takes financial expansion phase of capitalism as the normal case and predominant factor. He calls it also the “businesslike imbecility” (1964a [1923]: 360) that shapes modern social order.

In line with these observations, it is now all the clearer why they display two alternate approaches to technology. In this sense, their disagreement on the key concepts for the process of innovation, that is, profit, credit and entrepreneurship, stems from this fundamental difference, that is, from their differential characterization of the tendency of capitalist development peculiar to the era they lived in. For instance, profit, in Schumpeter’s world, is the outcome of innovation and therefore material expansion/production and is the essence of technological advance instead of a barrier on the way of technological and therefore industrial progress. Related to this he denotes a very contradictory point according to Veblen: “Pecuniary gain . . . is a matter of industrial development” (Schumpeter 1961 [1934]: 94). In Schumpeter’s scheme, capitalist development is essentially dependent upon entrepreneurs’ pursuit for profit through innovations. He writes, “[w]ithout development there is no profit, without profit no development” (1961 [1934]: 154). As far as Schumpeter is concerned, profit

derives only from the carrying out of new combinations by the entrepreneur.

Elsewhere he states in the same manner:

Entrepreneurial profit . . . arises in the capitalist economy wherever a new method of production, a new commercial combination, or a new form or organization is successfully introduced. It is the premium which capitalism attaches to innovation (Schumpeter 1991b: 113).

In contradistinction to Schumpeter, Veblen suggests that profit is not the outcome of new technological improvements, but responsible for the curtailment and retardation of technological and industrial advance. Profit is in the main the result of sustainable high prices and lucrative business affairs that are sharply at odds with the logic of industrial system, that is, maximum production which, on the part of entrepreneurs, gives birth to the threat of overproduction that reduces prices and therefore profit. Incidentally, as pointed out, to Veblen, the essence of capitalist development does not consist in innovation competition between rival business enterprises but in price competition. What is more, “price is of the essence of the case” (Veblen 2001 [1921]: 13) and high price, being the source of profit of entrepreneur, emerges out of largely sabotage, “a conscientious withdrawal of efficiency” (2001 [1921]: 13), not from the innovation process. Of much greater significance, profits obtained from high prices are, for the most part, invested in financial assets such as bonds, stocks etc. by businessmen.

The end is pecuniary gain, the means is disturbance of the industrial system . . . [I]t is, by and large, a matter of indifference to him [businessman] whether his traffic affects the system advantageously or disastrously. His gains (or losses) are related to the magnitude of the

disturbances that take place, rather than to their bearing upon the welfare of the community (Veblen 1958 [1904]: 20).

By the same token, entrepreneur, a technological agent, and credit, an essential and a healthy factor in technological advance, in Schumpeter's setup, turn into "corporation financier" (2001 [1921]: 20) and "fiscal sabotage" (1964a [1923]: 353) of technological advance and industrial system respectively in Veblen's analysis.

To conclude, Veblen and Schumpeter represent the institutional approach to technology. Their conflicting and congruent arguments present us a detailed conceptual framework to evaluate contemporary technological phenomena in capitalist development from the institutionalist point of view. If we take Veblen's standpoint, technology manifests itself as a countervailing power against business/finance capitalist order and it enables us to develop a modern critical theory of business enterprise. If we take Schumpeter's standpoint, technology appears to us as a routinized business expedient in the hands of professional managerial teams under the large corporate concerns, which is far from generating the process of 'creative destruction', the essence of capitalism. Either way, we are far removed from the naively optimistic view of technology that pervades much of mainstream literature.

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