

Veblen, Schumpeter and Technology*

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Introduction

By probing Thorstein B. Veblen's (1857-1929) and Joseph A. Schumpeter's (1883-1950) views, this paper 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. On the other side, by comparison, Schumpeterian agenda today is mostly used to analyze dynamic technological innovation process in capitalist motion. Particularly, 'New Evolutionary Theory' that has gained significant place vis-à-vis neoclassical growth theories for about last thirty years in the economics of technology literature is called a neo-Schumpeterian wave. In juxtaposition, looking closer, it becomes manifest that it is also traceable to Veblenian notions concerning the evolutionary process of institutions.

* I would like to thank Eyüp Özveren for his both worthwhile suggestions and editorial contribution on an earlier version of this work. I also thank Ahmet Haşim Köse, Ahmet Öncü and Erkan Erdil for their valuable comments. Needless to say, any inconsistencies and shortcomings are my own.

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Thus, if Veblen's viewpoint related to technology and institutions seems to have been neglected by this new evolutionary theory, in effect, his legacy has always remained behind contemporary descriptive and institutionalist analyses as much as that of Schumpeter. In this sense, this paper, based upon a comparative analysis of Veblen and Schumpeter, is engaged with presenting an alternative conceptual framework for technology studies by elucidating the congruent and conflicting arguments of Veblen 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" (1951 [1949]: 287). 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 [1950]: 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* (1950 [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.

That said, a prolific literature has arisen concerning various thoughts of Veblen and Schumpeter, ranging from economic methodology and philosophy, politics, economic sociology to purely economic issues. However, their overall comparative studies 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 paper I aim at comparing their views regarding technology. First part will be devoted to display definition of technology and its role in the process of social and economic evolution in their theories. Second part will be reserved for the agent of technological change in Veblen's and Schumpeter's approaches. In this part I will examine the role of entrepreneurs in technical and industrial sphere from their standpoints. Third part deals with the function and consequences of credit-money supplied by bankers in technological and industrial process. Finally, by considering the different periods from which they take off in order to reveal capitalist motion, we will show that Veblen's and Schumpeter's visions present us with alternative technological and economic processes corresponding to two different phases of historical capitalist development.

Technology and Change

Both Veblen and Schumpeter are occupied with developing a theory of social and economic change in which technological development manifests itself as 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 the most powerful factor on the way to change. 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. Their differences can be treated under these 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” (1994b [1921]: 28). 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, 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 movement . . . new sources of supply . . . new trade routes and markets to sell” (1950 [1942]: 68). Therefore, 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 wrote 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.

Finally, 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 (Schumpeter1961 [1934]: 85).

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 1964b [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).

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 1950 [1942]: 104n). Correspondingly, for Veblen, “modern culture is creative” (Veblen 1961 [1919]: 2). However, 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. 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” (Veblen 1898). Every social phenomena comes into the scene in “the sequence of events” (Veblen 1898). 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. This being so, 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.

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 1994a [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 (1994a [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 1950 [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" (1950 [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. Franco 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" (Ferrarotti 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 1964b [1923]: 102). Veblen suggests that he deals with as much business management side of the industrial system, namely, “pecuniary employments” as “industrial employments” (Veblen 1901) 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 being traceable back to the “merchant adventurer” (1964b [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 1964b [1923]: 102-103).

In ensuing lines Veblen defines ‘the captain of industry’ as a “great tool-builder” (1964b [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” (1964b [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. 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” (1994b [1921]: 29). He states that entrepreneur is the new name of businessman in current economic theory “who takes care of the financial end of things” (1994b [1921]: 29). 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” (1994b [1921]: 29). 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” (1964a [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.

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 (Veblen 1946 [1914]: 222-223).

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.

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. 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 1964b [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” (1964b [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 doing so, 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.

That said, 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" (1964b [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" (1964b [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" (1964b [1923]: 361). In another statement, he writes in the same manner as while "capitalization and earnings are a business proposition; livelihood is not" (1964b [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" (1964a [1919]: 169) in Veblen's theory.

Conclusion

In his book, *The Long Twentieth Century* (1994), Giovanni Arrighi, by taking Fernand Braudel's trilogy, *Capitalism and Civilization: 15TH—18TH Century* (2002 [1979]), as departure point, explores the historical process of capitalism. In his analysis, Arrighi focuses on four capitalist state experiments and, by doing so, 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'. 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” (1964b [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’ 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 Schumpeter 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 [1918]: 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, to Veblen, the essence of capitalist development does not consist in innovation competition, as Schumpeter avers, between rival business enterprises but in price competition. What is more, “price is of the essence of the case” (Veblen 1994b [1921]: 17) and high price, being the source of profit of entrepreneur, emerges out of largely sabotage, “a conscientious withdrawal of efficiency” (1994b [1921]: 17), not from the innovation process. Of much greater significance, profits obtained from high prices are invested, for the most part, 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” (1994b [1921]: 29) and “fiscal sabotage” (1964b [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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