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An Examination of Veblen's "On the Nature of Capital" in Light of Recent Developments in the Software Industry: Implications for Economic Growth.

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Abstract

Veblen was concerned with how and why economies and economic institutions evolve over time. The emphasis was on structural changes rather than on simply quantitative growth. In the paper entitled "On the Nature of Capital" Veblen traces the changes in technological knowledge that lead economies to embed the "stock of common knowledge and skills" into capital goods and the subsequent rise of the "owner-employer" to a dominant position in modern economic societies. Recent developments in the software industry in the form of "copy-left" software have dramatically challenged the position of very large and dominant firms, precisely by allowing individuals to produce products with tools that are equivalent (and often superior) to those used by large capital-intensive organizations. This paper examines whether this new form of legal institution has proven to be successful enough to become an enduring aspect of economic life, and the subsequent effect on the stock of capital of an economy.

1. Introduction - Capital and Economic Growth

The link between the capital stock of an economy, the investment in new capital assets, and economic growth was developed early in the economic literature. At first many macroeconomic growth theories regarded capital as a homogenous entity, i.e. a single good that was capable of producing any required variety of the countless goods and services required within an economic system (Solow, 1956, Romer, 1996).

In this literature not only was capital homogenous, it was also considered to be tangible. The expenditure on intangibles (human capital, research and development, brand promotion, and many other forms of intangible investment) were regarded not as capital assets, but rather as "technological progress". The effect of such expenditure was seen as a change in the level of efficiency with which the firm (or economy) used its inputs (labour and capital) to produce outputs, rather than as an increase in capital. Capital could thus be quantified by two variables; the quantum of capital and an index that represented the level of technology.

The accounting model was even less helpful in that not only were intangible assets of almost all types treated as expenditure in the year in which they were incurred, all measurements of tangible assets were recorded on a historical cost basis.

The result has been that in the mainstream literature “capital” has been treated as a homogenous commodity, and that the emphasis was laid on physical rather than intangible assets; with “technical progress” accounting for the increasing importance of these intangible assets.

The policy implications were clear; economic growth requires capital, and more growth requires even more capital. Woe betide any emerging economy that was not able to attract enough (homogenous) capital to grow at a rate faster than the population growth rate.

The assumption of the homogeneity of capital has however been brought into question in the past, by, among others, the Austrian School and especially by Ludwig M Lachmann (1978), who held that:

“It is hardly possible to discuss the causes and consequences of a change in a stock (of capital) without some knowledge of the nature and composition of this stock: or, it is only possible to do so if we are prepared to abstract from all those features of the situation which really matter.” (p. xiii)

2. The Importance of Intangible Assets in Modern Economies

The implication of capital as a homogenous good is that the distinction between tangible and intangible assets is of little consequence, especially if the economy as a whole is considered. This could be true, but only under very restrictive conditions; viz. that there was an unchanging (and linear) relationship between the stocks of tangible and intangible assets. In reality this relationship has changed considerably in the recent past, and there is every reason to believe that the relationship will become even more unstable in the near future.

Nakamura (2001), writing about the US economy states that:

“the rate of investment in intangibles, and its economic value, accelerated significantly beginning around 1980. Currently, I estimate that US private gross investment in intangibles is at least \$1 trillion. ... An intangible investment rate of \$1 trillion suggests that US businesses are investing nearly as much in intangibles as they are in plant and equipment. It also suggests that a third of the value of US corporate asset are intangibles ...” (pg.2)

Of what do these intangible assets comprise? Lev (2001) points out that the terms:

- intangible assets - used mainly in the accounting literature
- knowledge assets – from the economics literature, and
- intellectual property – used in the management and legal literatures

essentially refer to the same thing i.e. a claim on future benefits that flow from a non-physical source.

Lev (2001) uses three major nexuses to group intangible assets. Firstly there is the nexus of *discovery* - this would include all forms of research and development (R&D). Secondly there are *organizational practices* which would include factors such as firm strategy, in-house methods of organizing the business, etc. Thirdly there is the *human resources* nexus of intangible assets.

While it is clear that intangible assets are important in a modern economy, does this imply that economic policy designed to promote growth needs to be changed? Would not a policy of simply providing ever increasing amounts of capital take care of the required economic growth? Why would the composition of the capital stock be of interest?

3. Veblen and Economics of Institutions

Thorstein Veblen is best known for his work entitled *The Theory of the Leisure Class*. His contribution to the study of economics was however of a much wider nature, and was influential among professional economists. Veblen was the first editor of the *Journal of Political Economy* and the American Economic Association celebrated the centenary of his birth with the publication of a “Round Table” discussion of Veblen’s contribution to economic thought.

However Veblen’s writings today are somewhat neglected. One of Veblen’s biographers, Joseph Dorfman (1935) ascribes this to the fact that Veblen was both an economist and an artist; the second attribute leading to a writing style that is difficult at times to follow. Dorfman (1958) possibly overstates the matter;

“As a writer ... he is full of whimsy and humour. He loves to tease, to exaggerate, to present fantastic and poetic images, to utilize symbolism and allegory and to mobilize folklore. He will even use archaic words and phrases to fit the mood of an archaic economic and social order. As he unfolds various aspects of Western civilization, he is a throwback to the saga tellers of his Norwegian forebears and the writers of epic poems with their tales of intermingled tragedy and comedy ... “ (p2)

So far ranging were Veblen’s enquiries that he often studied (and published articles) on what today are seen as the separate disciplines of sociology and cultural studies. [For example he published articles with titles such as *The Economic Theory of Woman’s Dress* and *The Instinct of Workmanship*].

Veblen’s view of the economic process together with those of John R. Commons, and later Wesley Clair Mitchell and John M Clark constituted the school of thought that has become known as “American Institutionalism”. Veblen attacked neo-classical economics as being too narrowly focused. Sowell (1999) states the matter thus:

“(Veblen) argued that the particular assumptions of neoclassical economics left out precisely what the considered most important to investigate – how and why economies continually evolve structurally rather than simply grow quantitatively.” (p800)

Samuels (1999) sums up the position of Institutionalists well:

“The fundamental institutionalist position is that it is not the market but the organizational structure of the larger economy which effectively allocates

resources. To the extent, then, that institutional and neoclassical economists study the same questions, for example, resource allocation, the institutionalists generally encompass a broader or deeper set of explanatory variables: instead of having price, and resource allocation, be a function of demand and supply in a purely conceptual market, these latter are in turn related to the structure of power (wealth, institutions) which help form them. Power structure in turn is related to legal rights, thence to the use of government in forming legal rights of economic significance and thereby influencing the allocation of resources, level of income, and distribution of wealth.” (p865)

Among contemporary economists John Kenneth Galbraith is perhaps the leading exponent of the Institutionalist School.

4. Veblen and the Nature of Capital

In August of 1908 Veblen published the first of two papers on the nature of capital (Veblen 1908). These papers contain much of the theory underlying the more well known of Veblen’s work, and Veblen’s treatment of “capital” is clearly set out.

Veblen begins by critiquing the then current economic theory of production and distribution:

“The current theories of production, as also those of distribution, are drawn in individualistic terms, particularly when these theories are based on hedonistic premises, as they commonly are” (p517)

Thus methodological individualism is rejected as it ignored the (changing) social context and institutions:

“Now, whatever may be or may not be true for human conduct in some other bearing, in the economic respect man has never lived an isolated, self-sufficient life as an individual, either actually or potentially. Humanly speaking, such a thing is impossible. Neither an individual person nor a single household, nor a single line of descent, can maintain its life in isolation. Economically speaking, this is the characteristic trait of humanity that separates mankind from the other animals.” (p518)

Humans live and work in communities. Veblen postulates that each community will, over time, develop a body of “technical knowledge” that will aid the members of the community in their everyday activities, both social and economic. To Veblen “capitalism” is a rather recent phase in the life of mankind, and in pre-capitalistic societies:

“This information and proficiency in the ways and means of life vests in the group at large; and, apart from accretions borrowed from other groups, it is the product of the given group, tho not produced by any single generation. It may be called the immaterial equipment, or, by a license of speech, the INTANGIBLE ASETS of the community” (p519, emphasis added).

In pre-capitalistic economies, and especially in less developed economies, Veblen considers these intangible assets to be “far and away the most important and consequential category of the community’s assets or equipment”. Furthermore these assets are held by the community and not by individuals, and

“In any known phase of culture this common stock of intangible, technological equipment is relatively large and complex, i.e., relatively to the capacity of any individual member to create or to use it; and the history of its growth and use is the history of the development of material civilization” (p521)

However as the technology develops it becomes more and more embodied in physical goods that are needed to implement the technology, and thus use of the technology (which was previously loosely held by the community) becomes available only to those members of the community who are able to secure the use of these physical goods (capital assets).

In the final phase of a capitalist economy, economies of scale have set in; and only those members of the economy with access to larger units of capital equipment are able to compete successfully. Thus Veblen states:

“It is not until a late period in the life-history of material civilization that ownership of the industrial equipment, in the narrower sense in which that phase is commonly employed, comes to be dominant and typical method of engrossing the immaterial equipment. ...the unit of industrial equipment, as required by the new technological era, was larger than one man could compass by his own efforts with the free use of the commonplace knowledge of ways and means. And the growth of business enterprise progressively made the position of the small, old-fashioned producer more precarious.” (p533)

And thus the stage is set for Veblen’s analysis in The Theory of Business Enterprise (1904) in which increasing monopolization of industry and other forms of market failure begin to take root.

5. The New Intangible Assets

Veblen’s analysis of the formation, control and effectiveness of newly created intangible assets is useful in considering the large increase in intangible assets in the modern economy. These new assets have taken many forms; from the electronic publishing and distribution of books (of which the Kindle is probably the most well known) to the discoveries of DNA synthesis and manipulation.

In the following section the phenomena of Open Source Software is considered. This is possibly the most mature of the recent categories of intangible assets, and the results of the analysis are expected to apply, mutatis mutandis, to the other categories of modern intangible assets.

Open Source Software

Richard Stallman is credited with initiating the concept of Open Source Software (OSS). While working as a researcher in the Artificial Intelligence Laboratory at MIT Stallman seems to have developed an abiding passion: software was akin to scientific knowledge, and it should be freely available to all interested parties, not only to use, but more importantly, to be available in such a state that it could be fully understood and modified at will. This passion could only be realized if the “source code” of the program was available and placed in the public domain.

Stallman started the GNU project (which aimed to develop and distribute an entire operating system and concomitant tools) and formed the Free Software Foundation to publish the GNU software under the GNU General Public License (GPL) in such a manner as to ensure that his objectives would be achieved.

The GPL was an inspired piece of legal work. DiBona, Ockman and Stone (1999) summarize it as follows:

“The GPL basically says that you may copy and distribute the software under the GPL at will, provided you do not inhibit others from doing the same, either by charging them for the software itself or by restricting them through further licensing. The GPL also requires works derived from work licensed under the GPL to be licensed under the GPL as well.”

A Grass-roots Revolution

The success of the Open Source revolution did not rest on the GPL alone. An equally important reason for its success was the manner in which OSS was organized. OSS is a genuine grass roots revolution. Lead by visionaries like Stallman, Eric Raymond and Bruce Perens it has inspired a generation of students who learnt computer science by using the GNU project tools – and who have now graduated into spheres of influence in the Information Technology environment and industry in general.

Eric Raymond compares the process by which software is built by the OSS community and the proprietary vendors in “The Cathedral and the Bazaar” (Raymond 2000). The most surprising aspects of the process are the amount of collaboration possible and the ability of the OSS community to rapidly respond to users’ needs. Raymond states:

“The history of Unix should have prepared us for what we’re learning from Linux (and what I’ve verified experimentally on a smaller scale by deliberately copying Linus’s methods). That is, while coding remains an essentially solitary activity, the really great hacks come from harnessing the attention and brainpower of entire communities. The developer who use only his or her own brain in closed project is going to fall behind the developer who knows how to create an open, evolutionary context in which feedback exploring the design space, coding contributions, bug-spotting, and other improvements come from hundreds (perhaps thousands) of people.” (p.21)

The pervading ethos of OSS practitioners has been that of sharing and of “giving something back” to the community. This is not to say however that members of this

community are acting out of a sense of altruism. Since the software is given away for free, any pecuniary reward comes from consulting, and consulting opportunities and fees derive from the individual's personal reputation. Thus DiBona, Ockman and Stone (1999) state:

“Programming is a gift culture: the value of a programmer's work can only come from sharing it with others. That value is enhanced when the work is more widely shared, and the value is enhanced when the work is more completely shared by showing the source, not just the results from a pre-compiled binary.”

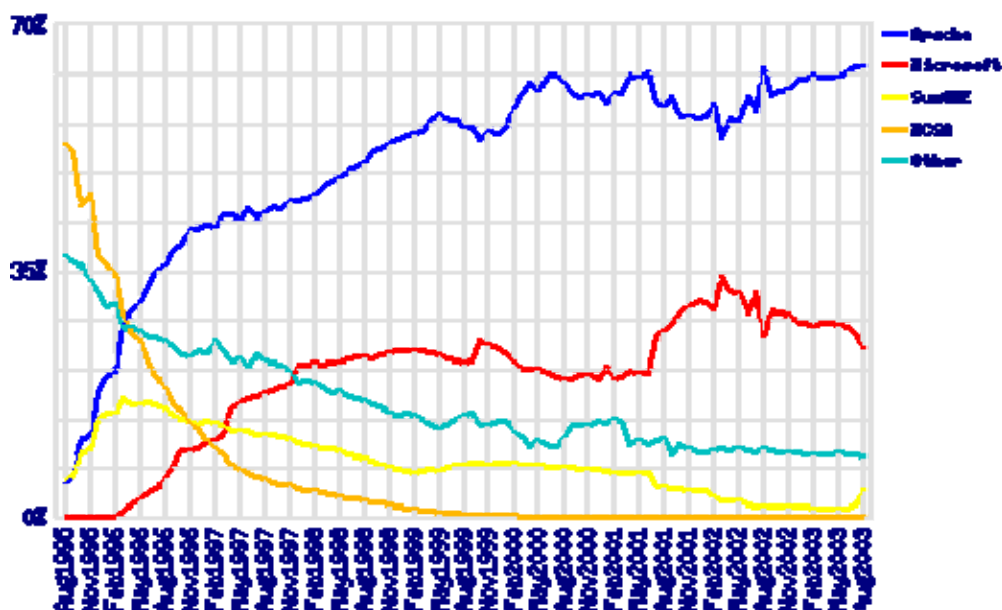
Thus it is in the programmer's financial interest to contribute code to the OSS projects.

Success of OSS

Some major information technology companies have come to see OSS as a way of developing a portion of their offerings. Thus IBM, Sun, HP and Oracle have all adopted the open source model as part of their business strategies.

The most well known of all OSS projects is undoubtedly the Linux operating system. However there are many other OSS projects that lie hidden because they are not on the desktops of users. Thus the Apache web server has gained much of the available market share as the following data from the Netcraft survey (<http://www.netcraft.com>) for August 2003 of over 42 million sites shows:

Market Share for Top Servers Across All Domains August 1995 - August 2003



Top Developers

Developer	July 2003	Percent	August 2003	Percent	Change
Apache	26951879	63.72	27388860	63.98	0.26
Microsoft	10976342	25.95	10165745	23.75	-2.20
SunONE	674571	1.59	1534586	3.58	1.99
Zeus	766943	1.81	746240	1.74	-0.07

Advantages of Using OSS

There are a number of advantages for organizations that use OSS, these include;

- low or zero cost of acquisition, and no royalties or licensing fees
- avoiding “vendor lock-in”
- idiosyncratic needs can catered for.

The benefits of OSS are even larger for society as a whole, since;

- code can be adapted to meet local needs (e.g. local languages)
- the development of transferable technological skills is encouraged
- the global nature of the OSS community provides opportunities for collaboration, knowledge sharing and the development of the skills base.

These benefits have indeed been recognised, and Bruggink (2003) describes some of the envisaged benefits and recommends a strategy:

“A highly significant development in recent years has been that national and local governments including those of the UK and South Africa have recognised opportunities which open source can offer, not only as a way of saving money, but also as a stimulus to an autonomous domestic ICT sector and the development of a local ICT skills base. Key to official strategies in support of open source are government procurement policies that favour open source software for government services such as schools, hospitals, public works, etc.”

A study entitled “Open source in Africa: Towards Informed Decision-Making” (Bruggink 2003), which studied the use of OSS in Uganda, Tanzania and Burkina Faso found:

Open source software is not widely used in the countries surveyed compared with either licensed or pirated/black-market propriety software. The use of open source is often confined to “back office” applications, such as email and web servers, although open source content management systems are increasingly widely used.”

The report identified a number of obstacles to the adoption of OSS – these include:

- availability – the cost of using the internet to download the software is unusually high in the countries surveyed
- lack of support from suitably qualified technicians

- information on migrating from proprietary to OSS is hard to find
- large hierarchical organisations are hesitant to use OSS (risk-aversion?)
- OSS are considered to be less user friendly than proprietary alternatives.

6. Implications for Investment and Economic Growth

Veblen's analysis of economic institutions (and their development over time) stopped at the beginning of this century, but his framework can be used to assess the important developments of the last 30 years. The growth in OSS is an important phenomenon, not only for the software industry, but as a possible precursor to a more general change in economic institutions, especially in the light of the importance of "knowledge assets" in economic growth.

The following implications are drawn from the discussion of the recent success of OSS:

- The institutions that are necessary for the success of OSS have grown organically, and without the aid of government or central authorities – indeed property rights (as embedded in the GNU GPL) are held by the "community" in general, and do not require a central authority to enforce them.
- Technological change is not necessarily embedded in costly physical equipment – and thus it is not able to be controlled exclusively by one group in society.
- These projects can be successful, sustainable, large scale and compete effectively against other technologies and/or established industries.
- There are no barriers to entry, in fact the opposite is the case. Entry is encouraged as this is one of the important mechanisms that keep the products / services viable, since the community as a whole owns and develops the product. Competition is thus a sine qua non for these products.
- For countries that are currently short of financial capital such investment opportunities may be even more important than for capital-rich economies.

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