

Cognitive Capitalism: Foundations, Assessment and Evaluation of New Perspectives

Iyad Dhaoui

Research Unit Money, Development and Infrastructures (MODEVI)/ Faculty of Economics and Management of Sfax, Airport Road km 4.5, Sfax, 3018, Tunisia

Abstract: *The objective of this paper is to stipulate that the new mode of regulation of the economy must be understood in terms of cognitive capitalism. We will keep the idea that the dynamics of transformation which confronted modern societies are characterized by the fact that the accumulation increasingly wear on knowledge. First, we will explain and argue our position with reference to some stylized facts and essential breaks that characterize the crisis of industrial capitalism and the transition to immaterial capitalism. It will also issue to put into perspective the nature of new challenges that characterize the advent of immaterial capitalism. We will also study the problem behind the formulation of the hypothesis of cognitive capitalism and the way that, far from being opposed, proposes to address the shortcomings of an approach that finance the autonomous actor and principal of all current changes of capitalism. Moreover, rather than revolution, the knowledge economy recovers mechanisms of economic development studied since the classical authors. We will spot if this economy is the "paradise" promised to developing countries. A key point is reported on the issue of knowledge production. Often discussed bias, this production does not explain clearly enough potential levers of territorial public action. This observation motivates the development of a model of knowledge production. All these benchmarks will be developed in the second part.*

Keywords: *Cognitive capitalism, Fordist model, Knowledge, ICT.*

I. Introduction

“Knowledge is our most powerful engine of production”¹

In examining the economic literature, several assumptions were made on post-Fordism. In this research, we extend the analysis by developing the hypothesis of a new era of capitalism on the exhaustion of the industrial model and move toward a cognitive capitalism.

So, the historic upheavals which led to this major change in the dynamics of the long history of capitalism invite us to understand the issues of what was probably the last great crisis of industrial capitalism. We will refer to the concepts of information revolution, knowledge economy or economy based on knowledge. Yet, as a public good, knowledge generates externalities, like all information, but is distinguished, however, due to problems of transmission problems and codification. Thus, knowledge is the "source of the XXI century [...] It is vital for our future".²

In this perspective, a strong entry into the world of work, higher productivity than the average investment in research and development and a good connection between knowledge and production, are also important. Generally, the fate of countries or regions and the development of prosperous economic areas and open international necessarily pass by strengthening research and training, whether scientific, industrial or financial. Universities, government, economy and society should undertake joint efforts in this direction.

II. Cognitive Capitalism as the Outlet of Industrial Capitalism

Capitalism is an economic concept whose function is supposed to vary according to the way of life of societies. The capitalist system is inherently an unstable system, subject to indecision and crises. Reasons to believe that capitalism is inherently unstable are many and varied. Analyzes of changes occurring in the global

¹ Marshall A., [1890], « Principles of economics », Book IV, Chapter I (The agent of production: land, labour, capital and organization.

² Audretsch D.B. et Lehmann E.E., two specialists in Innovation in Max Planck Institute of Economics in their paper « Les universités et la croissance économique régionale » (Activity Report 2005. Max-Planck Gesellschaft. Max-Planck-Institut für Ökonomik, léna, 2005). Autor's translation.

economy are multiple. Marx (1867), Schumpeter (1928), Keynes (1936) and Minsky (1983) are alright the economists who contributed mostly, from very different perspectives, to clarify and formulate this belief.

The contemporary era is marked by a number of changes affecting capitalism in depth. Indeed, after long tried to identify these changes by placing them in the extension of Fordist capitalism, economists are used to consider a break they showed deeper and more radical.

Generally, it is assumed that capitalism is the product of successive initiatives and adaptations over time. It has taken many forms, most of which still coexist today and continue to evolve.

These forms of capitalism in societies recognize in the societies in accordance with nature of the means of production employed in a given time. We find essentially the model of tangible capitalism and the model of intangible capitalism. The latter is derived from the mutation of production conditions, where it is increasingly appeal to knowledge capital.

III. Cognitive Capitalism: Concepts, Approaches and Benchmarks

III.1. Cognitive capitalism: definition and justifications

III.1.1. Methodological guidelines

Our purpose is to explain the economic and social changes in modern epoch from an analysis that puts on its core a specific type of accumulation. In this way, we will situate quite clearly in a classical way of political economy.³

In fact, we start from the principle that the economy is defined less by its equilibrium at a given moment than by the disequilibrium. To better explain, it challenges the idea of the ability to mobilize resources for investment and also how these resources are removed to determine and demonstrate the ability to project into the future.

As we paid attention to the distinctive content of the investment and its location, we can develop a universal and neutral analyzing framework (the market) and advocate the reference to some large permanent laws (the falling rate of profit for example).

For this reason, we are in a perspective that recognizes the relevance of an analysis in terms of periods or cycles and generally accepted the existence of historicity. The study of this historicity examines the ability of a society to be set in motion and change.⁴

Once these bases informed, we understand that we have been led to the theory of regulation. Indeed, we find in this corpus not only a relevant framework, but a theoretical and methodological achievement that will be useful and suitable.

However, this framework cannot explain especially the types of accumulation. For this reason, before defining the notion of cognitive capitalism, we will explain the general analytical framework of the theory of regulation.

III.1.2. Theory of regulation: a framework for analysis

In the vocabulary of the theory of regulation, the concept of mode of production is defined as the category one level higher than the mode of development.⁵

It means "any specific form of relations of production and exchange, that is to say, social relations governing the production and reproduction of material conditions for human life in society".⁶

The accumulation is related mainly on machinery and work organization. This is addressed as the organization of production and the allocation of workers to jobs. It is simply to put the work available to the capital. In this context, cognitive capitalism is another system in which the accumulation is about knowledge and creativity that is to say on forms of intangible investment.

The choice of a methodological approach combining theory, history and transformation of social relations is one of the central concerns in the initial basic research program of the regulation school. A first historical perspective is that history is not a linear process, but proceeds by duplication and crosses. Similarly, a mode of production never occurs in pure form, but is articulated modes of production. Indeed, a new historical system of accumulation never fully departs its predecessor, but it rearticulates under a new logic. A second perspective is that the essential function of history is to understand the present in the light of the past. This

³ We reluctance by the classical theory of the existence of a surplus, part of which, reinvested allows growth.

⁴ Here we take the word historicity in the sense of social production.

⁵ Boyer R. and Saillard Y., [1995], « Théorie de la régulation : L'état des savoirs », La Découverte.

⁶ Boyer R., [1986a], « La théorie de la régulation : Une analyse critique », La Découverte, coll. AGALM, p 43.

approach also implies that the present, the meaning and the implications of changes in contemporary capitalism will guide us through the questions we ask of history. Hence, the hypothesis of cognitive capitalism and the analysis of changes in the role of knowledge in the history of capitalism are very important.

III.1.3. Definition and key features of cognitive capitalism

This concept of cognitive capitalism denotes a major transformation of the employment relationship and forms of competition in which knowledge appears increasingly as the key issue of value creation and capital accumulation.

This new regime is manifested by a strong empirical research, technical progress, education, information systems, communication, innovation, organizational learning and strategic management organizations. From the demand side, consumption is also oriented to techniques that are practicing mental faculties through interaction with new technical objects. Moreover, a society in which proclaim the guidance of cognitive capitalism tends to increase and exert direct control over the premises or actors with knowledge that it is in the field of production, trade, or organization.

Note that it is no longer, as in the industrial society to increase domination of production sites or to develop the organization of production and control a production capacity of more scope to benefit economies of scale or effects of experience. It is mainly to manage technical knowledge to ensure the development of learning processes, create new knowledge, and to household access to knowledge available outside. The originality of the thesis of cognitive capitalism is the question of how and under what conditions a capitalist organization of society is possible where the main activities are centered on knowledge. Capture gains from current or future knowledge is the central issue of accumulation and plays a key role in the formation of profits.

III.1.4. What is not cognitive capitalism ?

The hypothesis of cognitive capitalism, by its very closely nature linked to knowledge, differs from other assumptions on contemporary manifestations of technique or change on the new nature of change growth. Firstly, we cannot confuse the economic, social and institutional development in a way towards emerging with new technical devices generally designated by the notion of new information technologies and communication. Indeed, the dynamics of cognitive capitalism is behind the development of these technologies, while it is in their technical supports which maintain its processing capacity.

But the events of the accumulation of knowledge and scientific and technical developments beyond the information technology represent only one aspect.

Then, the hypothesis of cognitive capitalism eliminates any commitment to technological determinism that society evolves adapting to exogenous technological change.

Also, the concept of cognitive capitalism has nothing to do with the analysis of theorists of the New Economy. These economists stipulated the information revolution associated with ICT as the main cause upheavals that shook the operation of industrial capitalism, paving the way for a new form of post-industrial development. On the other hand, the arguments of the New Economy have helped to spread the idea of a dual economy that is to say, a separation into two sectors: High Tech sector's on one side and low Tech sector's (Old Economy) on the other.

But the concept of cognitive capitalism refers to a structural change that cannot be surrounded by isolating an area specialized in the production of knowledge and considering the knowledge economy as a sub-discipline focusing on a particular aspect of the functioning of the economy.

Rather, cognitive capitalism means a global process that occurs in all sectors by the importance of externalities related to knowledge and its effects on the organization of the technical and social division of labor as a whole.

Finally, the hypothesis of cognitive capitalism is not obviously incompatible with other proposals favoring the dominant influence of financial markets and / or changes in corporate governance.

While the hypothesis of cognitive capitalism plays a central role in changing norms of accumulation, production and consumption, other proposals tend to play them a secondary or derivative given place is now occupied by the earnings per share in business strategies.

III.2. Cognitive capitalism as a framework for interpreting changes in capitalism: a historical perspective by Vercellone⁷

⁷ First version of this paper was presented at the third day of the LAME «Les transformations du capitalisme contemporain, faits et théories : État des lieux et perspectives», 31 march au 2 april 2004.

We have already emphasized that the crisis of transformation that comes from cognitive capitalism is far from being explained by a technological determinism that would make ICT the main factor of the transition to a new organization of the division of labor and social relations. The origin of cognitive capitalism is deeper, more structural and more complex.

The key is to understand why, through the crisis of Fordism, some parameters or central institutional factors of industrial capitalism are challenged and identify these parameters. The decisive argument of the thesis of cognitive capitalism is the end of industrial capitalism. The issue of exhaustion of Fordism goes beyond the issue of the crisis of a mode of development.

Developments of capitalism are the incentives for economists to renew its theoretical analysis. Yann Moulier Boutang (2002) considers cognitive capitalism as a new form of historical capitalism, succeeding merchant capitalism and industrial capitalism.

He summarized this position most clearly: "The thesis defended here is that of a new" great transformation "of the economy and thus the political economy [...] While this is not a break in the mode of production as we are still in capitalism, but the components of the latter are also renewed as industrial capitalism could be compared to market capitalism. To describe the transformation underway we will use the notion of cognitive capitalism as a third kind of capitalism."⁸

III.2.1. Two hypotheses

➤ *The lack of financial capitalism hypothesis*

To explain the instability of the current economic climate, the proponents of the theory of financial capitalism had first proposed clarification. The shareholder capitalism would be replaced managerial capitalism and the Fordist era productive by imposing performance standards for businesses.

In this perspective, according to Hoang-Ngoc and Tinel (2003), finance played a crucial and largely exogenous role to the employment relationship in the institutional changes of the past two decades.

It follows that "in a positive perspective, the hypothesis of the crisis of Fordism is perhaps relativized. The fundamental of mutations specific to twenty years is less than the wage relation in the financial report where shareholders have tightened their standards residual control"⁹.

Finally, this analysis shows that the key issue to overcome such crisis would be to regulate the financial markets. This regulation goes on the one hand, by an organization of regulatory power of States, on the other hand, by the institutional pillars of the Fordist wage relation.

➤ *The hypothesis of a high level of crisis and transition*

The second assumption concerning the emergence of cognitive capitalism is a break on the trends that have characterized the regime of production and regulation of the economy of knowledge from the first industrial revolution.

Indeed, this disruption could be characterized by opposing almost word for word trends of the new capitalism and those of industrial capitalism. Thus, the intellectual and intangible becomes the main source of value by changing criteria specific productivity to industrial capitalism.

Also, the knowledge embedded in the work are becoming an increasingly precedence over knowledge embodied in fixed capital by supporting a movement combination of design tasks and execution of manufacturing and innovation.

III.2.2. Social crisis of the Fordist wage relation as the origin of cognitive capitalism

The social crisis of Fordist wage relation is revealed through three key phenomena:

(i) The dissent of scientific organization of work and the standard of full-time employment. Indeed, there has been a rise in tensions generated by the divided labor and repetitive, more fully, by the Fordist organization of industrial work that opens blockades and strikes;

(ii) The decrease in the efficiency of capital, i.e. the inability of productivity gains resulting from the Fordist system to offset the costs of capital;

⁸ Moulier Boutang Y., [2002], « Nouvelles frontières de l'économie politique du capitalisme cognitif », *éc/artS* N.3, Autor's translation. <http://www.ish-lyon.cnrs.fr/labo/walras/Objets/New/20021214/YMB.pdf>

⁹ Hoang-Ngoc L. and Tinel B., [2003], « La régulation du nouveau capitalisme : Analyses positives et recommandations normatives comparées », *Cahiers de la MSE, série Rouge*, N. 115.

(iii) The development of an intellectuality diffuse. Indeed, there has been a movement to spread the knowledge generated by the development of mass schooling and higher average level of education.

This new quality (intellectual) labor force has led to the rise of immaterial labor and intellectual and challenging forms of division of labor and technical progress from the first industrial revolution.

This crisis in the Fordist organization of industrial work has given rise to a formation of a new subjectivity. Many studies have shown with searched statistical analysis until the late 1960s, under the pressure of conflict for the re-appropriation and socialization of knowledge and emancipation of the wage relation, the development of education becomes in part a variable independent of the cycles of capital accumulation.

Thus, we can say that cognitive capitalism was not simply the result of a long-term trend in the accumulation of knowledge that is manifested by a shift from quantitative to qualitative generating an economy based on knowledge. It was also, and perhaps primarily, the result of a complex dialectic conflicts / restructuring. It does not appear that the Fordist period is characterized by an intense in technological innovation.¹⁰ It is rather in the late seventies, when the crisis of Fordism is already present; we are witnessing a major technological change centered on electronics and computers. This is the time of takeoff robotics, computer-aided production and development of management information systems.

IV. The New Enclosures of Cognitive Capitalism

IV.1. The central tension of cognitive capitalism

A fundamental feature of capitalism is that cognitive skills training and, more generally, the so-called human capital do not originate exclusively in the company.

For Schumpeter and Perroux, for example, "the capitalist system [is] embodied in the institution of private enterprise".¹¹

In cognitive capitalism, off-business tends to make a remarkable importance, including the system of education and research.

One of the tensions, that is to say, one of the sources of complexity of cognitive capitalism, is rooted in the distinction between, on the one hand, an organized system of research, training and development of knowledge and, on the other hand, the diffuse and adaptive character living individual cognitive dispositions.

In addition, another aspect of the type of power can be identified when looking at the economics of innovation. In this framework, neoclassical and liberal economics posits that without incentives, that is to say, without the ability to capture rents associated (patents), nobody will invest in research.

Note also that the government's management of research, from the point of view of welfare, is preferable than private management (whether monopoly or competition).

Do not forget to mention that in cognitive capitalism, much more than in industrial capitalism, and for different reasons, investment and innovation have a strong social dimension. This is not without effect on the forms of competition.

IV.2. Problems position

Now we will explore and explain the new frontiers of cognitive capitalism, that is to say property rights in intellectual creations.

IV.2.1. Cognitive capitalism and the new division of labor

Generally, an accumulation system is characterized by two things: the object of accumulating a part (here: knowledge and creativity) and the nature of the division of labor on the other.

Our approach is that the essential character of knowledge as an object of accumulation and innovation tends to develop a new division of labor. This is one of the manifestations of overtaking industrial capitalism.

IV.2.2. The new employment relationship

With intangible capitalism, it is necessary to have the sense of hearing the labor as a complex productive, creative or trainers activities. Obviously, this is adopted from an extensive design and enhanced function of activity.

¹⁰ Sur ce point précisément, cf. Giarini O. et Loubergé H. [1978], « La civilisation technicienne à la dérive », Dunod, chap. 3.

¹¹ Schumpeter J., (1928), «The Instability of Capitalism», Economic Journal., p110. Autor's translation.

In this sense, it should be noted that in the context of a move towards a creative and immaterial labor, it is not only knowledge in the narrow sense of the term that are at stake. Also, behavioral and interpersonal skills those are utilized and valued by the company.

This is the subjectivity of the worker who is designated. That Y. Moulier-Boutang denominates "operation in the second degree." The result, highlighted by him, is that "The worker no longer appears then as its sole possessor of hetero-produced labor, but as happening and continuing to happen itself"¹².

IV.2.3. Organizational priorities and strategies change

At the beginning and during the eighties, various analyzes have raised in front business organization questions. These analyzes have explained the conditions of implementation of policies or strategies of effective innovation.

What is important, is not taken into account only the potential of new technologies, but we also clarifies that "technical change is a social process which, if not accompanied by structural, appropriate and institutional reforms and adequate levels of investment, may not contribute to employment growth or improvement of well-being".¹³

In this perspective, two sets of work then hold the attention: first, the academic research from the evolutionary thought; and secondly a series of reports and OECD conferences published mainly between 1985 and 1991.

However, there is a strong convergence between these two types of contributions which, in summary, demonstrate that the technological development and innovation are cumulative processes that generate changes in practices and knowledge, and who have a high organizational or social dimension.

More than output, specialization is the knowledge and skills. This is explained by the fact that companies are engaged in a technological trajectory that oversees some of the changes to come. Business, financial and legal knowledge are also crucial.

IV.2.4. Innovation changes in rhythm and character

Innovation and technology are inherently related to the organizational forms and behaviors of actors who operate them. Therefore, they cannot be independently addressed.

So, we can say that the ability of the company to produce, operate or receive certain knowledge depends on their skill; that is to say on sets of procedures for resolving problems.

There is a repetition of knowledge insofar as the acquisition of new knowledge depends on knowledge availability. Learning is one of the principal terms of the acquisition of knowledge. Therefore, the company must be understood as a system that transforms and contributes to change its environment. It is an organization that mainly ensures cognitive regulation. Companies are analyzed as systems of production resources to the extent that they create new knowledge. This is can be interpreted as a breach of the standard model which sees the firm as a black box. Thus, in this new paradigm, the company is not only a production entity, but a network or a set of organizational arrangements.

V. Conclusion

In this paper, it was shown that the transformations of capitalism are a standing invitation to renew its theoretical analysis. This section has examined the current present cognitive capitalism as a new form of historical capitalism, succeeding merchant and industrial capitalism.

This paper examines the hypothesis that the exhaustion of the Fordist model is the starting point of the productive and financial fragility of contemporary capitalism. The great crisis of mutation makes depression experienced by the development of capitalism after the first industrial revolution. It corresponds to the transition to a new phase of capitalism. This hypothesis, which remains in the embryonic stage of the research program, rather than a theoretical construction completed, has already resulted in a number of publications and now seems to meet some echo.

It should also be noted that this assumption obviously has its opponents, carrying more or less constructive criticism. So, the basic structures and new education must be developed. This article concludes with the lack of harmony that these debates have emerged today.

¹² Moulier-Boutang, (2002), « Nouvelles frontières de l'économie politique du capitalisme cognitif », *éc/artS*, N. 3 p21. Autor's translation.

¹³ Préface au Rapport Sundqvist, OCDE, 1998.

Today, for example, it is particularly difficult to reconcile with regard to the behavior of knowledge as an economic good, its formalization and its overall economic measure.

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