

Bioeconomics, Labor Flexibility and Cognitive Work: the Unequal Exchange

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1. Introduction

Labor flexibility has to do with the functioning of labor market. The main economic literature, according to the General Equilibrium paradigm¹, agrees with the fact that exchange in the labor market is free and *solvable*².

In a theoretical context, in which there is individual private property and the economic activity is finalized to the maximum increase of agents' welfare, only *solvable* exchanges are analyzed.

Definition 1: private *solvable* exchange

An exchange is defined solvable when it implies the passage of property rights of the commodity against its value (price): who offers, gives up the property rights, who demands, purchases the property rights.

It follows that the private exchange is an exchange among rivalrous goods, otherwise there is no property rights exchange.

In fact, the value of a good and its *solvability* derives from its exclusivity in the use. Of course, public goods are not considered.

Definition 2: free private *solvable* exchange.

A private solvable exchange is defined free, when the following two conditions hold:

¹ Most of the manual in economics, in their first chapters, consider labor market as a normal free market, which can be analysed with the traditional tools of supply and demand analysis (see, for instance, Varian, 1992), even for the neo-keynesian thought. Notice that Keynes, instead, does not treat labor analysis in the same way, since he neglects the existence of a labor supply (see Keynes, 1936). For an heterodox interpretation on labor flexibility and its effects and social costs, see G. Standing, 1999.

² The type of economy here considered is a production economy with private property.

- *The two contractors act at parity level, that is, they are not potentially discriminated in asymmetrical way, are autonomous agents with the same potential and effective decision power. Behavioural differences are due to different subjective preferences and to a different degree of uncertainty*³.
- *There is total price flexibility, that is, none of the two contractors is able to impose a price to the other (price-taker agents).*

Microeconomic dominant analysis studies free solvable private exchange, with the only exception of public economics. And labor economics follows the same methodology. Is this theoretical approach appropriate?

2. The solvability of the labor market exchange

Not all the private markets deal with solvable exchanges.

The most relevant exception is the credit market. The existence of *seignorage rights* implies that money exchange has nothing to do with property rights. Money, in fact, is property of a supra-individual board (the State and the Central Bank) and money is actually “sign money”, that is, social convention. It is not a case that in the macroeconomic textbooks credit market is usually not considered (but only financial markets, where transfer of property rights occurs)⁴.

The question of exchange solvability is relevant even in the labor market. The point is source of controversial positions. The problem is if the work availability is separated or not from the human being.

Definition 3: work availability

Work availability is defined by the working time supplied by agents in order to gain a monetary income.

Work availability is something different from the labor activity.

Definition 4: labor activity

Labor activity is defined by the different ways with which work availability is used or exploited according to the different degree of alienation.

Definition 5: alienation

Alienation is defined by the degree of separation between worker and content (object, result) of his work.

When the separation reaches the highest level, that is, when the work object or result is completely expropriated from the worker, then we talk of *total alienation*.

³ General Equilibrium Theory, the mother of the modern neo-liberalist theory, is based on methodological individualism. Only individual agents are considered and only microeconomics analysis is relevant. But, in order to model the individual behaviour, very strict assumptions are made: the hypothesis of maximising rationality states that each agents is different because of preferences but are all equal as far as acting opportunities are considered. It follows that, despite the individualism, the agents act in the same way, since they are potentially equal and no discrimination ex-ante is possible. Only a conformist behaviour is possible, otherwise the agent is irrational. Individualism matters, not individuality. Not bad, for a theory which would like to highlight the diversity among human beings.

⁴ See, for instance, O. Blanchard, 2000.

Proposition 1

Labor exchange can be defined solvable if and only if work availability and not labor activity is exchanged.

Corollary 1: labor exchange is solvable if and only if there is alienation.

In the neoclassical theory, the law of demand and supply holds and it acts in all the markets, labor market included.

Hence, monetary wage is determined on the basis of the theory of scarcity. In fact, neoclassical theory states that labor supply (measured by the working time: in other words, labor supply implies work availability) is the result of the agent's choice by solving the trade-off between the need of an income and the lost of "leisure time" (defined as not working time → labor marginal disutility).

In order to allow the solution of this allocation problem, the characteristics and the contents of labor activity does not play any role. This latter is incorporated in the preference structure of the agents. That implies that in neoclassical economy the concept of alienation does not exist.

Nevertheless, labor, as a whole, is a particular good. Differently from the other goods, the good "work availability" is not physically separable from the agent who owns it (as it can be for vehicles or potatoes).

In the labor exchange, what it happens is not an effective transfer of property rights (power) but rather of availabilities (potentialities).

If we consider the labor exchange as a whole (work availability plus labor activity), it is not possible to separate them. Thus, the solvability of labor exchange can be put in doubt. Consequently, the law of demand and supply in determining the value of labor can not be completely applicable to the labor market.

Proposition 2

The value of work availability (that is, the price → the monetary wage) is not only depending on its scarcity, but it should take in account the labor activity (in other word, the degree of alienation), on the basis that there is no physical separation between the object of work and the agent who offers it.

That means that the degree of alienation should enter in determining wages level

Proposition 3

The law of demand and supply is inapplicable to the labor exchange, as a whole.

Proposition 4

Labor market cannot be analyzed as each other market.

Hence, most of the dominant labor economics, based on liberalism, is useless.

3. Is labor market a free market?

We verify now the existence in the labor market of the free market's two conditions: the lack of discrimination between the two contractors and the price flexibility, according to the law of demand and supply. As far as the second condition is concerned, we just argued that it is not valid for the labor market. We discussed now the second condition.

Definition 6: labor supply

Labor supply is defined from work availability. It depends on the trade-off between the marginal disutility of labor (loss of leisure time) and the monetary income, which the agent is able to gain from labor activity (monetary wage).

It follows that labor supply is subject to a *budget constraint*.

Definition 7: labor demand

Labor is requested by entrepreneurs and it consists both in work availability and labor activity.

Since in the manufacturing activity labor and machinery (physical capital) are separated (first is property by workers, second by entrepreneurs), they need to be joint in order to start production. This decision is taken from entrepreneurs, not by workers. That is why are entrepreneurs who demand labor.

Labor demand depends on two principal factors:

- investment decisions, on the basis of expected demand and profit;
- labor productivity, according to the existing technology.

Thus, labor demand is subject to a technological constraint and to an expectation constraint, not to a budget constraints.

The diversity of the two constraints is determinant in defining a behavioural ex-ante discrimination between the two contractors in the labor market. The labor exchange does not imply equal opportunities for the agents. Budget constraints, in fact, is more relevant than the technological one. In a monetary economics, it is possible to live without technical change, but not without money. Actually, the discrimination between workers and entrepreneurs depends on the fact that entrepreneurs have the property (or the control) of the means of production whilst workers do not.

Proposition 5

In the labor market, by definition, there is no free, solvable exchange. Labor market is a particular market, which is structurally subject to constraints. It cannot be “flexible”.

4. Rivalry in the labor market exchange.

The separation between the worker and his work availability implies that labor, as a product separated by the producer, is a rivalrous good. If work availability is offered to an entrepreneur, it cannot be simultaneously offered to an other. Thus, rivalry in the labor market exchange implies total alienation.

The level of alienation varies according to principal parameters:

- The degree of orders on duties, which depends on the type of labor activity;
- The degree of routinized behaviour in the labor activity.

Definition 8: corporeal work

Corporeal work is defined by the prevalence of body energy intensity activity over brain activity, due to the net separation between labor activity and labor contents. Corporeal work is different from artisan work.

Corporeal work is characterized by a *formal subsumption*⁵ of labor under capital, based on the separation between labor activity and work availability. It presents high level of alienation.

Definition 9: cognitive work

Cognitive work is based on the constant use of all the brain faculties such as relation, mnemonic, cognitive, learning activities and so on.

Cognitive work is characterized by a *real subsumption*⁶ of labor under capital both in the work availability and labor activity (what it is called today, *adaptability*⁷), till to eliminate the separation between them and to reduce to the minimum the degree of alienation.

In an hypothetic ranking from corporeal to cognitive work, it is reasonable to assume a reduction of the degree of orders and routinized work. Consequently, the level of alienation decreases, too.

Given these definitions and coming back to the question of rivalry in the labor exchange, the point is the following:

Proposition 6

In corporeal work, labor exchange implies rivalry. In case of cognitive work, rivalry tends to become inexistent.

To better discuss the qualitative changes introduced by the diffusion of cognitive work, it is necessary to highlight the structural and deep transformations of the labor market in the last twenty years.

We start from the declining of the so-called fordist-taylorist-keynesian paradigm. According to the several analysis about the passage to post-fordism (or, better, “flexible accumulation paradigm”), some stylized facts become evident, as far as western rich countries are concerned:

⁵ The concept of formal subsumption is a Marxian concept. Marx uses the term “formal subsumption” to name processes whereby capital incorporates under its own relations of production labor practises that originated outside its domain. The processes of formal subsumption are thus intrinsically related to the extension of the domain of capitalist production and capitalist markets. In the formal (and real, see note 6) subsumption in Marx, see primarily K. Marx, 1976, vol. 1, pp. 1019-1038.

⁶ The concept of “real subsumption” is the result, in the Marxian thought, of the growth of capitalist economy. As capitalist expansion reaches its limit, the processes of formal subsumption can no longer play the central role. The processes of the “real subsumption” of labor under capital

⁷ One of the four pillars of the European Employment Strategy as result of Luxembourg Summit of 1997 is just called “adaptability”. It refers both to workers and to firms and, as far as workers are concerned, it means for worker to encounter the necessities of firms to better mismatch labor supply and demand.

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- Added value production is no more based only on material, energy intensive inputs but more and more on immaterial inputs, such as intangible factors, which are not easily measured and whose production depends on brain intensity labor⁸.
- Added value is no more based on an homogenous and standardized way of production and labor organization, independently on the type of output. Production activity can use different and several ways of organization, characterized by a network structure, thanks to information and communication technologies (Ict) and transport technical change. It follows the decline of a unique production unit (large enterprise) in favor of the diffusion of different intra-firms chains based both on subcontractor and cooperative *filières*.
- Labor activity structurally changes from both qualitative and quantitative point of view. As far as work material conditions are concerned, it is nowadays statistically confirmed an increase of working time and, often, an accumulation of more duties at the same time, a decrease of the separation between working and life time and a prevalence of individual bargaining over collective bargaining. Furthermore, labor activity is more and more characterized by immaterial factors: relation and interpersonal activity, communication and brain involvement are interrelated and relevant. These activities need education, competences, knowledge and attention. The separation between arms and brain, typical of the traditional taylorist organization, tends to disappear till to develop a strong relationship of routines from one side and of deep involvement and adaptability to the work, from the other. To the traditional labor division based on the different duties, it is added the new labor division based on know-how and knowledge⁹, with the effect to increase the degree of labor subalternity. This subalternity is no more imposed by a command activity in a disciplinary way, as in fordist era, but it is introjected by social and generally accepted customs, thanks to the diffusion of conformist behaviours result of a sort of *social self-control*¹⁰. The individual bargaining becomes the natural institutional picture, inside which competition and emulation represent the guideline of the working behaviour.

When we discuss of *cognitive capitalism* or *knowledge-based society*, we mean production of money by means of knowledge and not only by means of commodities, through the exploitation of those faculties which has to do with brain and attention activities (cognitive labor)¹¹.

Since brain (as accumulation process of knowledge) is by definition individual, or, more, the principal element of identity definition thanks to memory and language¹², cognitive work can not be considered homogenous. It is bio-economic, that is, it depends on individual biology. In order to make it productive, cognitive labor needs a strong relational activity, as tool for its transmission and decoding of the accumulated knowledge. It follows that cognitive labor needs “space”, to develop a network; otherwise, if it remains incorporated in a single person, it cannot be valorized, or, in other words, it does not become *exchange value* but only *use value* for the single agent. *Cognitive capitalism*¹³ is by definition “network capitalism”, non-linear and the inner hierarchies are inside the different nodes which constitutes the same network: these new hierarchies are complex and linked to different factors, subcontractor relationships, depending on the technological and financial power structure¹⁴.

⁸ See C. Marazzi (1997).

⁹ There is a wide literature on the role played by knowledge in the innovation activity and in the firms organization, which is based on the evolution theory of the firm: see, later, para. 7. For an evolutionary theory of knowledge, see Dosi, 1996 and F. Malerba, L. Orsenigo, 2000.

¹⁰ The concept of social self-control reminds to the concept of society of control and bio-power. On these topics, see note 14.

¹¹ See C. Azais, A. Corsani, P. Dieuaide (eds), 2001.

¹² On human identity, defined as memory and language, the modern thought is still inspired by Locke. See Locke, 1690, Italian trans., 1994.

¹³ See. Y. Moulrier-Boutang (ed.), 2002.

¹⁴ See M. Castells, 2000.

5. Manual and intellectual labor (excursus 1)

The traditional and fordist division between manual and intellectual labor needs to be revised. The spread of flexible technologies linked to Ict structurally changed the way of working.

*Manual labor needs now more attention and individual involvement in the activity to check, modify and program the flexible manufacturing systems, with different degree of automation. The possibility of intra-communications between two machines thanks to informatic language implies an increase of skilled education and professional training. The level of routinised work tends to decrease, even if the degree of exploitation not. In fact, if the work becomes less taylorized, the speed of many technical operations increases together with the their number, which the same operator has to do at the same time (lean production). We define it **corporeal work**.*

*From the other side, "intellectual labor" was modified in deeper way. If once it was remunerated according to the type of activity, the degree of education and, anyway, not in a salaried way, now the standardization of cognitive procedures and the language codification have highlighted an increase of routinized behaviour and a taylorist organization of the "creative" working time. In many cases, it deals with salaried brain intensity activity, which is subject to different constraints and timing tables like a new type of cerebral assembly line. That is why we prefer to call it **cognitive work** instead of intellectual work. Of course, this argument cannot be enlarged to every type cognitive work. Since cognitive work, as we already discussed, is an individual work, it is possible to have a wide range of different activities, which can not be analysed in an homogenous way. Cognitive work has to do, by definition, with knowledge and learning process (by doing or by using). Nevertheless, we can distinguish two categories of knowledge, which play an important role in classifying cognitive work: codified and tacit knowledge.*

Codified knowledge is defined by all those competences and know-how which are transmittable and can be diffused in easily way with no prohibitive transaction costs thanks to Informatic and communication technologies (Ict). They constitute the most important tool for the diffusion of new technologies and they represent the "core" of professional training. More this knowledge is diffused, more people who has it can be substituted without lack of know-how for the firms. Thus, in presence of individual bargaining on labor market, this type of knowledge represents a disadvantage for the workers, diminishing their contractual power at individual level. Codified knowledge is more diffused in tech-taker industries, which usually adopt technology from outside and are not on the technological frontier.

On the other side, "tacit knowledge" is defined, by converse, from all competences and know-how which are incorporated in the experience of the worker for a more or less limited time and cannot be diffused outside since individual experience cannot be transmitted at all. In this case, the labor experience and the incorporated knowledge represent the "elite" of the labor market. It is this knowledge which is protected by patents and is not exchangeable on the information market. From one side, the worker, if it he has consciousness of it, has a strong individual bargaining power, from the other, "tacit knowledge" is the core of technological competitiveness of the firm and only constant investment activity is able to generate it and support it. It represents the "essence" of the technological command and concentration and it has to do mainly with the industries on the technological frontier. Further, it needs to be reproduced every time and who owns it must constantly regenerate it if he wants to keep intact his bargaining power

6. Production of money by means of knowledge

Capitalism system is able to reduce to *exchange value* (in order to get plus-value) what is technologically possible. The first industrial revolution of the late XVIII° century put labor free and thus productive. Thanks to French revolution, labor activity becomes free and, paradoxically, it needs to be remunerated and the labor market was born. Since labor is the only input able to induce accumulation, labor activity it self, according to the used technology, is the core of economic growth.

Is this the case of the production of money by means of commodities (M-C-M') and in the labor market what is exchanged is only work availability and not the agent (as it was when labor was not free in a pre-capitalist system, production of commodities by means of commodities, C-M-C). There is in some ways a separation between "object" of labor (the final commodity) and "subject" of labor (worker). That is the question posed by Marx with the word "alienation".

We already discussed the problem of rivalry in the labor market. Generally speaking, according to the economic theory, tangible goods are rivalrous, whilst intangible goods not. A theoretical model, for instance, is a not rivalrous intangible good, is an "idea", a pair of glasses is a rivalrous tangible good. If a good is rivalrous, its production cost and, consequently, its price is positive and constant for every user. For a non rivalrous intangible good, the production cost is the same, independently

on the number of clients, that is, it is null from the second user and more. It is important to notice that non rivalrous goods are normally incorporated in a material support, which is a rivalrous good. The point is that the cost of material support is not related to the cost of intangible good, which is incorporated in it. Paretian efficiency would say that the right price for non rivalrous intangible goods should be zero, but at null price there is no convenience to produce.

It is clear, now, why the question of copyright and patents is fundamental in a capitalism whose main output is more and more “knowledge”. Thanks to copyright and patents, a copy of an intangible good has a positive price, even if its production cost is null, as it is null the incorporated cognitive work, since only the work for the original good (and not for the copy) is paid. Of course, the author’s right, that is the remuneration of his cerebral activity, is something different from the copyright or from patent, that is, the exclusivity of the exploitation of the cerebral activity, which nothing has to do with the author¹⁵. The labor commitment in writing a book or in the creation of new software does not vary according to the number of sold copies.

Proposition 7:

In a context of corporeal labor, labor exchange implies a “particular” property rights exchange and rivalry.

The worker, during his working time, ceases his time availability in order to get monetary wage (hence, there is change of property rights as far as the worker’s lifetime is concerned) and, at the same time, if this time availability is at disposal of one entrepreneur, it cannot be free for an other entrepreneur, that is there is rivalry in its use and economic results.

7. The literature on cognitive and network economics (excursus 2)

The methodological individualism is the tool for General Equilibrium Theories (GET) to reduce any economic behaviour into a modelling scheme. Each economic exchange based on maximizing rationality which implies exchange of property rights on material and immaterial goods can be analyzed with the language of formal logic. Not always it is possible to define a paretian equilibrium, but in any case it is possible to set out a model and provide some solution of the economic problem on the basis of general equilibrium rules. . For instance, the presence of externalities or the existence of public goods do not allow a Pareto-efficient solution with the definition of a vector of equilibrium prices.

There is non doubt that information economics and network economics represent a great anomaly in the traditional laws of economics based on GET. Formerly, Kenneth Arrow in his pioneering contribution of 1962 and more recently in 1994, pointed out that methodological individualism was not able to provide a good explanation for the some particular goods, like public goods, and for the presence of strong externalities (market’s failures).

Public (or common, or collective) goods have not a market price, but have a tariff, since it is not possible to determine a precise private cost (but, rather, a social cost), since they are not rivalrous and it is not possible to define an individual property right. Therefore, their utility is not only individual but common, hence they are not appropriable for a private producer.

In presence of information and knowledge goods (cognitive economics), we face three more characteristics¹⁶:

- *knowledge and information are a cumulative good, whose utility cannot be measured even at public level. They go further the instrumental and utilitarian model, since they jointly depend on the degree of learning processes and on the extension of the iterative process to cumulate the same knowledge;*
- *the value of knowledge and of information goods is strictly related to the extension of their diffusion and, last but not least, to the speed of diffusion¹⁷;*
- *the cost of reproduction of an information or knowledge good tends to zero, thanks to the information communication technology (ICT)¹⁸. More in particular, cognitive and coordination costs (the new form of transaction costs when we have to do with knowledge goods) tend to disappear.*

¹⁵ On this topic, see the wide debate on free-software and the question of copy-left. See, among others, R. Scelsi (ed.), 1994.

¹⁶ For more details, see Yann Moulrier Boutang, 2001.

¹⁷ On this topics, see Rullani, Romano, 1998.

¹⁸ See, DeLong et alii, 2000, Rullani, Romano, 1998, Kelly, 1998.

Even traditionalist economists, like Carl Shapiro and Hal Varian¹⁹, agree in pointing out that knowledge goods are “experimental goods”, whose value differently varies according to individuals, with a particular cost structure, and the economic context, in which these goods are produced (the “network”), is source of strong externalities from the demand side.

These considerations are very important, because they represent a structural and irreversible change in the traditional microeconomics analysis. We can say that cognitive economics cannot be analyzed with the traditional GET tools as cognitive work is not reducible to the neoclassical labor market analysis.

In the middle of cognitive economics, there is the “network”. It is a form which cannot be assimilated either to the market or to the hierarchy (firm or State), or to a combination of the two. The “network” is not represented either by the hierarchical tree of the decision (like a Pert modelling according to operational research), or by a circle which enlarges starting from an initial impulse (price signalling or an innovation in the market): rather, it obeys to a rhizomatic model, which gemmates by a wave motion. Further, the “network” is a structure which is particularly suited to organize coordination and generation process of information and knowledge in presence of uncertainty. The classical problem posed by Ronald Coase in 1937²⁰ can be solved without referring to price mechanism (free market) or through firm or State hierarchy. Finally, the “network” is able to capture the highest degree of positive externalities (external and learning economies). In the cognitive economics, the presence of externalities is the rule, not the exception as in the traditional economics.

The economic literature is now starting to analyze these points and especially to study the consequences on the theoretical basis. Just to give some examples, we refer to three orders of problems:

- *In the cognitive economics, the model of productivity is non more associated to a mechanical input/output model, as in the traditional production function, based on the decreasing returns hypothesis. If it makes sense to talk about productivity (this is an open question), it seems more interesting to talk about the model of the biological life, in which the evolution patterns and the learning processes are the key factors in determining the “ dynamics of the productivity of cognitive economics. The output, in this case, is not always proportional to the input, even in presence of increasing returns. Cognitive economics is strictly related to bioeconomics.*
- *The concept of output maximization and input minimization need to be revised. Only satisficing results can be obtained and the behaviouralism based on procedural rationality is the only context in which bioeconomics (with its contents of relation activity, life experience, uncertainty, non-measurability) can be analyzed and described.*
- *Quantitative economics and formal modelling becomes useless. Stylized facts and evolutionary economics substitute them, as descriptive statistics substitutes predictive econometrics. Economic action becomes a dialectic process, result of the complementarity of human condition and of the external ambient, which cannot be more considered as static and inert. Since externalities are the rule, cognitive economics is characterized by dynamic processes with path-dependency and irreversibility. Equilibrium plays no more role.*

8. Flexibility and cognitive work

With the diffusion of production of money by means of knowledge, the nature of labor activity structurally changes, by posing new questions, many of them still need an answer.

In the market of cognitive labor, the internal exchange assumes a different meaning: if, from one side, it is still possible to generally assume that cognitive work availability still implies a change of the respective property rights, nevertheless, this change occurs in non linear and forced way. Cognitive activity can not be separable from the body, brain is not separable by arms. In the intangible production, body represents a constraint, but something else. And the content of labor activity, “the idea”, (a logistic solution and/or an intangible service) can not be alienated from the owner, more, it generates cumulative learning processes thanks to circulation and general exchanges of “knowledge” and “know-how”. It is at this point that it becomes necessary to force the cease of the rights on knowledge (as copyrights or patents), that is, the property rights on the result of the cognitive activity. But, differently from material production and corporeal labor, the supply of “knowledge” implies a process accumulation of knowledge, which cannot be alienated to the cognitive workers as before to the manual workers. The result is that “knowledge” is not a rivalrous good. The tradition ways of monitoring labor activity through disciplinary actions does no more play any role. Only in particular cases, there is a formal expropriation of the work object. Only if brain is separable from the body it will be possible to represent the old form of labor alienation, or,

¹⁹ See C.Shapiro, H.Varian, 1998.

²⁰ See Coase, 1937.

as modern cyber literature often assumes, only if brain is completely manipulated, unable to operate in autonomous way. Thus, it is necessary to highlight new more sophisticated mechanisms to monitor the cognitive capacity. Some trends in this direction seem to be evident:

- juridical trend: the prevalence of individual bargaining is becoming more and more the normal situation, not only in Anglo-Saxon countries. This trend is facilitated by the process of *individualization* of the labor activity, due to the linguistic characteristics of cognitive labor, which, by definition, are individual.
- Socio-cultural trend: a stronger control of information and a concentration of mass-media both at national and international level together with the building of positive and individualistic *imaginary* lead to a self-discipline and self-repression of many heterodox behaviours with negative effects on a critical and autonomous cultural capacity (*society of control*). This situation is even worsened in special segment of the labor market and in organizational context in which the practice of mobbing and individual competitiveness is more and more increasing.
- Inside the production (material and immaterial), the communication of knowledge tends to be more and more subject to routinized procedures, which are codified and exchangeable independently on the type of input. Only tacit knowledge is able to keep its autonomy and bargaining power.

Proposition 8:

Labor flexibility,

- **when it has to do with corporeal labor, implies wage reduction or an increasing in labor productivity (that is, in both the cases, an increase of labor exploitation);**
- **when it has to do with cognitive, but routinised, labor, implies new forms of control and, finally, the indirect expropriation of the (intangible) output of labor activity, mainly through practices of self-control;**
- **when it has to do with cognitive, but tacit, labor, increases the bargaining power of he worker.**

9. First conclusion

We argued the following points:

1. Labor exchange is a particular exchange which cannot be assimilated to a solvable exchange of any other commodity.
2. More in particular, the two necessary and sufficient conditions which allow to talk of solvable exchange – exchange of property rights and rivalry in the use of labor – are not always verified. As far as the exchange of property rights is concerned, it holds only if the commodity “labor” is considered as pure work availability, by assuming complete separation between the same work availability and the labor supplier. In other words, only if there is labor alienation. But this separation should affect the price of labor, whose level, hence, cannot be only determined according on the demand-supply law.
3. In case of total alienation, there is rivalry.

4. In labor market, in any case, even if a solvable exchange, under certain circumstances, is possible, the labor exchange is not a free exchange, since the diversity constraints which affect the two contractors implies an ex-ante discrimination in their behaviour.
5. If we consider an economy in which the production is mainly obtained through cognitive work and immaterial input, the labor exchange is no more rivalrous.
6. The relevance of relationship, learning, experience, language, individual character and personal expectations inside labor activity leads to the impossibility to separate this latter from the quality of labor. What in the taylorist paradigm was called “intellectual work”, professional work, high skilled work, remunerated not in term of salary but in term of results and performances and whose productivity was difficult to quantify, today, in the flexible accumulation paradigm, it is called “cognitive work” and in most of the cases (with the exception of the exclusivity of tacit knowledge) is characterized by routines, is quantified and salaried.

The production of money by means of knowledge and the centrality of cognitive work is a reality which cannot be misunderstood in the modern western economies. What in the taylorist era was the “oeconomicus”, today it tends more and more to appear as “bio-oeconomicus”, where all the existential activity are useful for and put in production, able to produce added value. The same classic distinction between production and reproduction, lifetime and working time, consumption and output tends to lose its original meaning.

Definition 10: Bioeconomics (bio-political production)

Bioeconomics is that economic process which really subsumes (and not only formally) the whole human-being, with the aim to achieve monetary accumulation

In this context, labor exchange is something that exits the tradition economic analysis and it cannot be more assimilated to the exchange of tangible goods and to market theory.

Preparatory corollary to the first paradox of labor exchange in bio-economy

In a bioeconomic process, labor exchange tends to be individually defined, without any mediation by intermediate forces (like Trade Unions). Nevertheless, if the worker is not in a monopsonist situation due to the possess of tacit knowledge, labor exchange is totally subsumed in the productive process and inside the hierarchies established by the bio-power structure²¹. It follows that labor exchange is no more solvable and not rivalrous, and, thus, it is not assimilable to free market exchange.

Proposition 9: the first paradox of labor exchange in bio-economy

Just when labor exchange becomes individual and it could be analyzed according to the premises of methodological individualism, it has no more sense to speak of solvable exchange in free market.

²¹ The concept of bio-power is due to M.Foucault. “Biopower is a form of power that regulates social life from interior, following it, interpreting it, absorbing it and rearticulating it. Power can achieve an effective command over the entire life of the population only when it becomes an integral vital function that every individual embraces and reactivates of his or her own accord” (M. Hardt, A. Negri, 2000, p. 23-24). As Foucault says: “Life has now become ... an object of power” (M. Foucault, 1994, p. 1979). Therefore, the concept of bio-power is strictly connected with that of *society of control*: they are the two faces of the same medal. For a deep analysis of these concept, see H. Dreyfus - P. Rabinow (eds), 1992, pp. 133-172.

Proposition 10

In bioeconomics, labor exchange becomes not measurable and not reducible to private exchange. Labor becomes a *common good*.

10. Second conclusion: why not basic income?

Labor market is a different and particular market, since labor is not a private good. We defined it as *common good*. A common good is something different from a public good, too. Public good is owned by the State, that is, a supra-individual entity. Labor is by definition individual, since it cannot be separable from the single human being.

Since men and women are social animals, they are used to share their lives in communities. We can call them families or in other way, it is not important. What is relevant to underline is that human experience, relation activity, learning process depend on the social connections which characterize the community. In other words, labor activity and practices are social attitudes, which can not be reduced to an individual basis.

Hence:

Definition 8: Common Good

A common good is the result of social procedures in production, or, in other words, is the result of a cooperative process at social level.

In the modern postfordist economies, the new temporalities of bio-political production (bio-economy) cannot be understood in the frameworks of the traditional conceptions of time. In the taylorist context, time was programmed and divided in order to increase and measure labor productivity through the apportionment of automatic processes and jobs. This was especially valid for the industrial sectors and it is not a case that only the labor of waged workers was productive (and, consequently, remunerated) and, therefore, all the other segments of labor appeared as merely reproductive or even unproductive (and, consequently, non remunerated). Both the working time and the type of job were strictly defined and separated from lifetime and free-time activities. Thus, it was possible to measure the labor supply and the intensity of labor. The determination of labor value (wage) was the result of these two components: working time and labor intensity (productivity), as result of a collective bargaining between entrepreneurs' associations and Trade Unions. Wages were determined in collective way but privately distributed, since each worker's commitment (in terms of effort and time) was measurable. On the distribution side, labor is considered as a private good.

In a bioeconomic context, instead, the production of added value (wealth) converges ever more with the production and reproduction of social life itself: it thus becomes ever more difficult to keep distinctions among productive, reproductive and unproductive labor. Labor – material, immaterial, cognitive or corporeal – produces and reproduces social life. The progressive indistinction between production and reproduction highlights the incommensurability of time and value. The most clear example is provided by cognitive work, in which the power of science, knowledge, affect ad communication is fundamental for its productivity, but whose source is not definable on individual basis, but only on social basis. It is the result of what Marx names the “general intellect”²². According to Marx, at a certain point in capitalistic development (which Marx glimpsed as the future), the powers of labor are infused by the powers of science, communications and language.

²² See K.Marx, 1973, fragm. XXXII.

General intellect is a collective, social intelligence created by accumulated knowledge, techniques and know-how. General intellect is a common good, whose value becomes incommensurable.

Proposition 11:

As labor moves outside factories and life is put in production (bioeconomy), it is increasingly difficult to maintain the fiction of any measure of the working day and thus separate the time of production from the time of reproduction, or work from leisure time.

There are no time clocks to punch on the terrain of biopolitical production.

Proposition 12:

In this contest, the right remuneration for bio-political inputs, since the most important input for production becomes the life itself, is a remuneration of the existence: in other words, a *basic income* and a *guaranteed income for all*²³.

Basic income stands opposed to all the family wage. Basic income extends well beyond the family to the entire population/multitude, even those who are unemployed, because the entire multitude produces. In postfordist society, labor power has become increasingly collective and social. The old fordist slogan “equal pay for equal work” cannot be more supported when labor cannot be individualized and measured.

Proposition 13: The second paradox of labor exchange in bioeconomics

In bioeconomics, labor exchange is subject to a process of individualization (outside free market), but its remuneration should be determined at social level.

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²³ For a deeper discussion on the definition of basic income in an postfordist economy, see A. Fumagalli: “Ten Propositions on Basic Income: Basic Income in a Flexible Accumulation System”, paper presented at 8th Bien Congress, Berlin, October 2000 (trad. it: in A.Fumagalli, M.Lazzarato (eds.), 2000.

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