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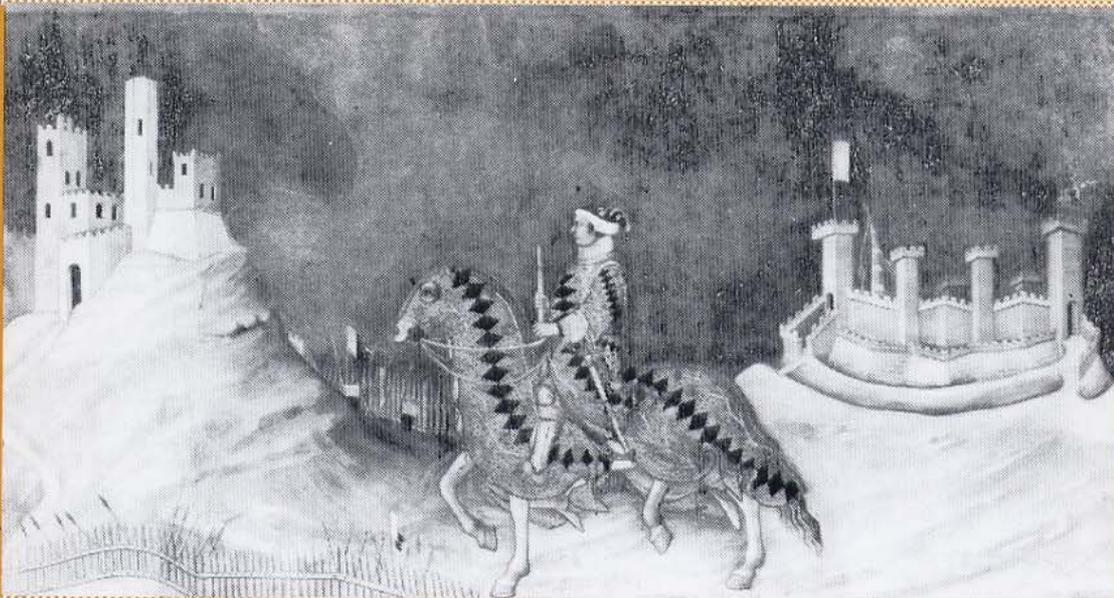


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Surplus-Value, Distribution and Exploitation

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Abstract: this paper introduces a notion of exploitation according to which participants in a cooperative production process are exploited to the extent that their earnings coincide with what they would earn from independent participation in the production process. This notion is then used to show that, in general, the institutional structure of production is not the solution to the problem of (opportunistic) exploitation, but may instead be the condition itself for its occurrence. Starting from the observation that surplus-value is almost always created by the collective undertaking of non additively separable investments, the key to the result is to take groups as units of analysis in a Marx-inspired framework driven by the evolutionary principle of differential, multilevel profit realization.

JEL: A12; D20; D33; D74; L22; J21; J64.

Keywords: between-group competition, within-group competition, intra-group relationships, inter-group relationships, efficiency-enhancing distribution.

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1. Introduction

In a quite frequently quoted passage from the chapter on cooperation in the first book of *Capital*, Marx wrote: 'The labourer is the owner of his labour-power until he has done bargaining for its sale with the capitalist; and he can sell no more than what he has, i.e., his individual, isolated labour-power. This state of things is in no way altered by the fact that the capitalist, instead of buying the labour-power of one man, buys that of 100, and enters into separate contracts with 100 *unconnected* men instead of with *one*. [...]. He pays them the value of 100 independent labour-powers, but he does not pay for the combined labour-power of the hundred.' (Marx, 1867, pp. 332-333, emphasis added).

Though not based on the labor theory of value nor aimed at determining 'natural' prices and abolish markets, this paper will argue that such a notion of exploitation – participants in a cooperative production process are exploited to the extent that their earnings coincide with what they would earn from independent participation in the production process, whereas exploiters are those who are able to appropriate the surplus from cooperation by controlling the production process – is largely consistent with the spirit of Marx's critique of the theory and practice of capitalistic production and, most importantly, with past and present actual forms of the institutional structure of production (firms *and* markets; see Coase, 1992).¹

¹ According to the labor theory of value, cooperation – as a consequence of what in contemporary terminology are termed increasing returns, peer effects and complementary efforts – is just one of the two main ways to decrease the value of subsistence wages so as to increase surplus-labor, surplus-value and exploitation (the other being the introduction of 'machinery'). When the focus of analysis shifts from price determination to the organization of production, however, Marx's view of cooperation deepens. When discussing the evolution of capitalism from peasant agriculture and independent handicraft, a point which will be crucially emphasized also in the paper, he observes that 'capitalistic cooperation does not present itself as a particular historical form of cooperation, but cooperation itself appears to be a historical form peculiar to, and specifically distinguishing, the capitalistic process of production.' (Marx, 1867, p. 334). This observation prompted the perception of the difference between the division of labor carried out by the market and the division of labor carried out within the firm: 'But, in spite of numerous analogies and links connecting them, division of labour in the interior of a society, and that in the interior of a workshop, differ not only in degree but also in kind (...). For instance, the cattle breeder produces the hides, the tanner makes the hides into leather, and the shoemaker, the leather into boots. (...). Now it is quite possible to imagine, with Adam Smith, that the difference between the above social division of labour and the division in manufacture is merely subjective, exists merely for the observer (...). But what is it that forms the bond between the independent labours of the cattle breeder, the tanner, and the shoemaker? It is the fact that their respective products are commodities. What, on the other hand, characterizes division of labour in manufactures? The fact that the detail labourer produces no

In modern terminology, the key analytical tool with which to illustrate the argument is the notion of team production, famously developed by Alchian and Demsetz (1972) to characterize the fact that capitalist production almost always takes place in forms which are not representable in terms of additively separable production functions. In other words, as implied by the above quotation from Marx, with team production the total product is larger (or better) than the sum of separable outputs from each cooperating individual, but '[t]here is no longer anything which we can call the natural reward of individual labour. Each labourer produces only some part of a whole, and each part, having no value or utility in itself, there is nothing on which the labourer can seize, and say: It is my product; this I will keep to myself' (Hodgskin, 1825, p. 85; quoted in Marx, 1867, p.355).

Viewing the surplus-value creation process as essentially investment-driven, the theoretical contribution of this paper is that it applies such a notion to investments. Production processes can be therefore classified as in figure 1, according to whether cooperation creates a surplus with respect to independent production both *ex ante* and *ex post*, *ex ante* but not *ex post*, *ex post* but not *ex ante*, or neither *ex ante* nor *ex post*.²

It is also shown by the figure that the logic of exchange among given individuals is best suited to analysis of only one case out of the possible four, namely the one where the production process requires investments which are separable both *ex ante* and *ex post* (fig.1, case a). Corresponding to the apparently institution-free framework of general competitive analysis, this is indeed the only case where, with the sole requirement of perfect competition, the institutional structure of production can be interpreted in terms of the optimal incentive condition involving the full appropriation of the fruits of individuals' own efforts. By independently specializing according to comparative advantage individuals can fully realize the gains from trade and, maintaining the radically methodologically individualistic approach to surplus-

commodities. It is only the common product of all the detail labourers that becomes a commodity.' (Marx, 1867, p. 354). In this sense, placing the legendary pin-making example in the right context, he anticipated the possible superiority of the firm with respect to the market as a mechanism with which to organize production, as well as the issues of coordination and power within the firm. However, especially as regards the co-existence of markets and firms, or in other words appreciation of the organizational virtues of output markets in correcting disequilibrium situations *ex post*, the way in which he did so is not sufficiently consistent, as shown by the two envisaged stages of 'single-firm socialism' and 'anti-firm communism'. See Pagano (1985, ch. 3; 2007). Parts of the chapters in *Capital* on which this paper draws are also reprinted in Putnam and Krozner (1996, ch. 4).

² Recalling the definition of investment as the current employment of resources to increase future production, the *ex ante* period is the period before the decisions taken become operative, while the *ex post* period is the period after the decisions taken become operative. Throughout the paper, these two periods will also be called inception ($t=0$) and realization ($t=1$).

value creation and realization, the logic of an exchange economy successfully applies to production.

In the other three cases, however, since (technological and organizational) cost minimization implies that investments must be undertaken collectively at least at some stage but contracts are incomplete, the three issues of the rules governing the division of labor and the distribution of surplus-value within the firm, and of their enforcement, are raised.³

In this respect, the paper offers an alternative to the new-institutional literature making ‘operational’ Coase’s insight that the institutional structure of production can be explained in terms of an efficient ‘meta-exchange’ of property rights.

In general, indeed, when surplus-value is created by the collective undertaking of non separable investments, the actual conditions under which such a surplus can be realized severely limit the applicability of the principle of individual contribution as a positive principle. Exploitation, therefore, should not be taken to mean the lack of correspondence between individual contributions and individual rewards as in its other traditional meaning, stemming from the subjective ‘neo-classical’ tradition and informing, under more stringent assumptions, the new-institutional literature. By contrast, as implied by the definition given at the outset, it can be taken to mean a lack of inter-subjectively defined rules on sharing the fruits generated by the team characteristics of the production process.⁴

³ Strategic complementarity is taken to be the main determinant of non separability so that organizational costs are mainly equated with coordination costs. Contractual incompleteness, which represents the institutional side of non separability, is to be taken in its usual meaning, and is the main reason why it makes a difference to assume given individuals or making room for their co-evolutionary interaction with institutions. See Milgrom and Roberts, 1992, ch.2 for the theoretical difficulty of distinguishing between technological and organizational costs, ch.4 for coordination costs, and ch. 5 for contractual incompleteness.

⁴ A notion of exploitation very close to the one adopted by this paper has also been found in Marx by Elster who, after the quotation at the beginning, cites the following passage: ‘In my presentation, the earnings on capital are not in fact “only a deduction or ‘robbery’ of the worker”. On the contrary, I present the capitalist as a necessary functionary of capitalistic production, and show at length that he does not only “deduct” or “rob” but forces the production of surplus value, and *thus helps create what is deduct; (...)*’ (Marx, 1977, p. 382, quoted in Elster, 1985, p.225). Exploitation therefore occurs because, for example: ‘(...) a skilled manager should be rewarded for the actual work of bringing workers together, not for the work done by those whom he assembles.’ (Elster, 1985, p. 226). According to Elster, this would imply that Marx, contrary to what he himself explicitly states, had a theory of justice and that exploitation is unjust because it violates the principle of contribution, the (‘socialist’) second-best principle hierarchically inferior only to the (‘communist’) need principle. Even as a principle of justice, however, Elster concludes that a notion of exploitation based on the labor theory of value fails to evade the well-known measurement difficulties. In this respect, notice that relinquishing the labor theory of value for a view of the surplus-value creation

Accordingly, under the conditions studied by the paper, it will be shown that the institutional structure of production is not the solution to the problem of (opportunistic) exploitation but may be the condition itself for its occurrence, particularly in situations which, in a fully methodologically individualistic framework, may look like competitive equilibria with free-entry and full employment (fig. 1, case c; proposition 3, first part).

Moreover, as a consequence of the weakness of the principle of individual contribution as a positive principle, even the marginal theory of distribution – whether the margin of analysis is defined in terms of commodities or, more conveniently, in terms of individuals (Makowski and Ostroy, 2001) – will prove to be undermined, so that the ‘classical’ issues of its inherently conflictual character, and of the difference between exchange and production, will be re-discovered.⁵

Obtained in a framework where individuals and institutions co-evolve in response to exogenous technological conditions and, possibly, to the endogenous rupture of shared understandings about the relationship between actions and outcomes, such results naturally also pave the way for acknowledgment of the effects of existing distribution policies, reducing the level of abstraction of the reasoning proposed and adding new arguments for their qualification as efficiency-enhancing.

The rest of the paper is organized as follows. The next section, after making the case for the methodology employed, details the contents of figure 1 and strengthens the links with the related literature. The corresponding results are set out in the form of propositions in sub-section 2.1. and discussed in sub-section 2.2. Section 3 provides past and present applications to the institutional structure of production (and distribution). Section 4 briefly concludes.

process as being almost always due to cooperation in no way obscures conflict in the workplace as the last quotation from Marx implies, but it does mean abandoning the idea that reality is driven by ‘natural’ laws based on objective (physically comparable) measures of value. In this sense, Marx’s critique of ‘Ricardian socialists’ as unscientific may have been influenced by the positivistic climate of his times. See footnote 13.

⁵ That production and exchange differ in nature because the former is concerned with flow variables and the latter with stock variables has also been emphasized by the neo-Ricardian literature (see Pasinetti, 1977). In this paper, the difference has less to do with the issue of scarcity vs reproducibility than with that of independence vs (inter-) dependence. By definition, indeed, with strategic complementarity the whole is not the sum of its parts because the latter *transform* themselves in the process of production.

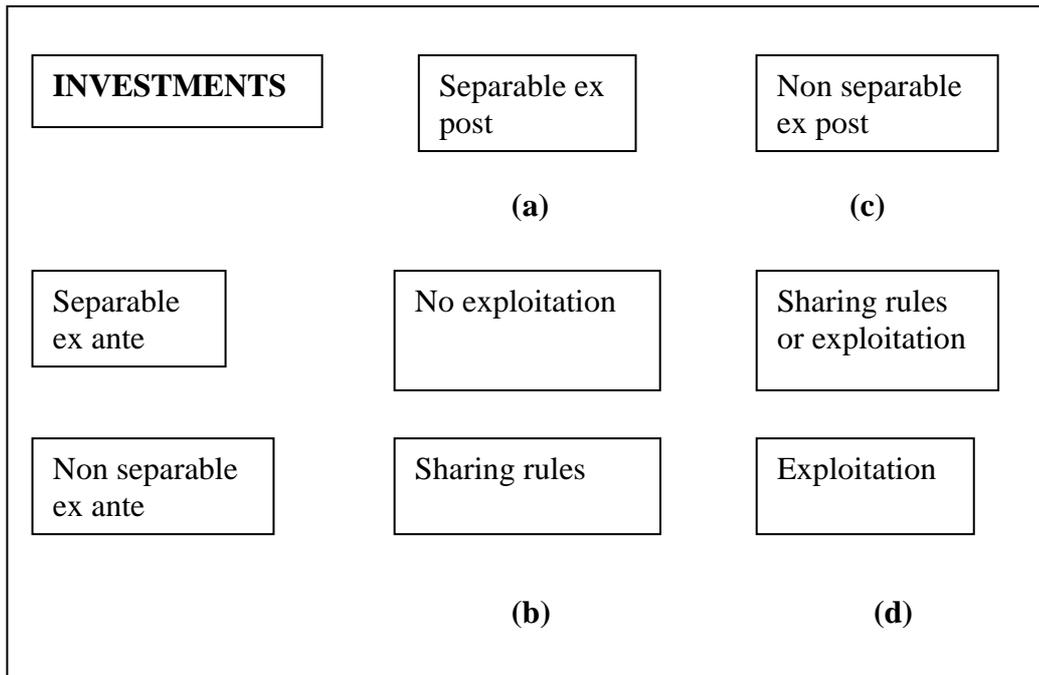


FIG. 1

2. Individuals and institutional rules between methodological individualism and holistic structuralism

Reversing the order followed in the Introduction, this section initially abstracts from the case of independent production (fig. 1, case a), and postpones its full discussion until sub-section 2.2.

The reasoning is as follows (fig. 2). When surplus-value is created by the collective undertaking of non separable investments – an apparently ubiquitous situation since otherwise we would not observe such extremely costly organizations as firms – an observer may be confronted by a population of groups, each consisting of the individuals who belong to it and of the institutional rules that govern its external relationships with other groups (*inter-group relationships*), and the internal relationships among group members (*intra-group relationships*).

By pursuing a not fully explored path between methodological individualism and holistic structuralism – that is, by seeking not to explain institutions in terms of given individuals or individual behaviors in terms of given institutions – the paper takes groups as the units of analysis in a multi-level competition framework where between-group competition and within-group competition are assumed to operate sequentially and, respectively, to

determine inter-group relationships (maximizing group value subject to an individual participation constraint ensuring that investments are made), and intra-group relationships (maximizing the intra-group decision-maker's share of the surplus, given the other group members' outside options).

More precisely, exogenous technology conditions (i.e., the type of investments depicted in fig. 1) determine the nature of inter-group relationships, these being defined as the rules that govern the process by which groups form, interact with each other, and become extinct.⁶ Providing for the conditions under which the requisite investments can be undertaken at minimum cost, they can be shown to be determined according to the group value maximizing the pressure of between-group competition. In other words, groups that fail to conform to the right type of inter-group relationships do not minimize technological and organizational costs and are therefore assumed to disappear.⁷

⁶The three types of inter-group relationships considered in the paper are termed *conflictual*, *fission-fusion with commitment*, and *fission-fusion without commitment*. According to the timing structure described in footnote 2, these terms mean, respectively, that productive groups form, interact with each other, and become extinct through mutual assimilation or absorption (never ceasing to exist as groups), through a two-period (rule-based) association of single individuals, or through a one-period (unregulated) association of single individuals. I adapt this terminology from evolutionary group selection models in biology, anthropology and economics, which also pioneered the formal modeling of the co-evolution between individual preferences such as social preferences and reproductive leveling (within-group) institutions such as food sharing and monogamy (see, respectively, Sober and Wilson, 1998, Einrich, 2004, and Bowles et al., 2003). Intended to explain non selfish cooperation, such models illuminate the conditions under which group selection may prevail over individual selection. Intuitively, this may happen when the between-group trait variance is higher than the within-group trait variance (in the extreme case of no inter-group variation, there is no role for group selection, whereas in the opposite case of no intra-group variation there is no role for individual selection). Inter-group relationships, therefore, are important parameters in such models because they determine the extent of variation among groups. For instance, whilst fission-fusion inter-group relationships are helpful in biological evolution because, unless groups periodically recombine, the selfish type will ultimately prevail within the group, conflictual inter-group relationships accelerate cultural evolution because the more successful (and more altruist) groups can spread through conquest and assimilation. In a recent paper, Bowles (2006) even shows that, in the case of humans, *lethal* inter-group competition may have been an important force even in genetic evolution (without implying that a genetic predisposition for altruism actually exists, nor diminishing the importance of culturally transmitted traits). Rather than exogenously determining the relative strength of within-group competition and between-group competition, which are assumed to operate simultaneously and in opposite directions, in this paper inter-group relationships endogenously depend on technology (they are institutional rules), and (through their effect on intra-group relationships) they determine whether or not such forces, considered sequentially, push the system in same direction.

⁷ This is a rather extreme assumption that ignores the factors, such as tacit knowledge, cumulative learning and path-dependence, emphasized by the evolutionary theory of the firm

Inter-group relationships have a twofold role. On the one hand, because they are the rules through which groups interact, they amount to a given regime of surplus-value realization, that is, the regime under which profit can be realized. Indeed, the three cases initially analyzed, corresponding to conflictual inter-group relationships, to fission-fusion with commitment inter-group relationships, and to fission-fusion without commitment inter-group relationships, will be respectively called a *between-group competition push* (as when profit derives from appropriating resources from other groups), a *between-group opportunity pull* (as when profit derives from niche competition), and a *within-group competition push* (as when profit derives from appropriating occasional benefits from cooperation).⁸

On the other hand, because inter-group relationships are the rules through which groups become extinct, they are assumed fully to determine who the (next period) intra-group decision-makers are (i.e., property rights and the associated sustaining beliefs system)⁹. The decision-makers' value maximizing pressure of within-group competition hence determines intra-group relationships, these being defined as the rules and the enforcement mechanisms governing the division of labor and the distribution of surplus-value within the group. In other words, as said, decision makers manage the production process so as to maximize their share of the surplus taking account of the other group members' outside options¹⁰.

in order to accommodate the variety of existing organizational forms in spite of competition (see Hodgson, 1998b, and the literature therein). It is a consequence of the already mentioned high level of abstraction in the assumed operation of the multi-level competition framework, where between-group competition determines what groups look like from the outside, leaving the task of establishing how they are internally organized to within-group competition. As will be seen shortly, however, the actual way in which groups compete with each other (i.e., market structure) is endogenous, so that organizational variety is associated with (and limited) to differences among industries. See also Alchian, 1950, and the discussion at the end of section 3.

⁸ I take from Ghiselin (1995) the terms 'competition push' and 'opportunity pull', which he uses to represent the possible sources of division of labor induced 'progress' in evolutionary biology. The first occurs with: '(...) one species 'wedging' another out of its place.' (p.1034), the second when: 'New places are created, and occupied (...)' (ibid.). In the language of game theory they correspond, respectively, to a pure conflict game (every outcome is Pareto-efficient) and to a pure common interest game (there is only one Pareto-efficient outcome).

⁹ Again, this is not an entirely realistic assumption because it overlooks the role of individual natural differences, the cornerstone of the logic of exchange. It is made precisely to highlight the institutional macro-foundations of individuals.

¹⁰ See Veherencamp (1983) for a similar characterization of the within-group situation. In her model, where she studies the despotic versus the egalitarian character of animal societies, subordinates' outside options are captured by the cost of dispersal, whilst the fitness 'production function' depends on group size (the dominant individual choice variable). Roughly, such a within-group situation is also the framework for the Marxian approaches to the emergence of the firm (e.g., Marglin, 1974). In this respect, the basic difference is that in

Accordingly, intra-group relationships will be finally distinguished according to two basic features. The first is whether they are *hierarchical* or *egalitarian*, both in the organizational sense of how decisions are taken (by fiat or by consensus), and in the distributional sense of how surplus is distributed (by appropriating or sharing). The second is whether they are *decentralized* or *centralized*, in the sense of whether or not recruitment occurs in the presence of equally attractive outside options.

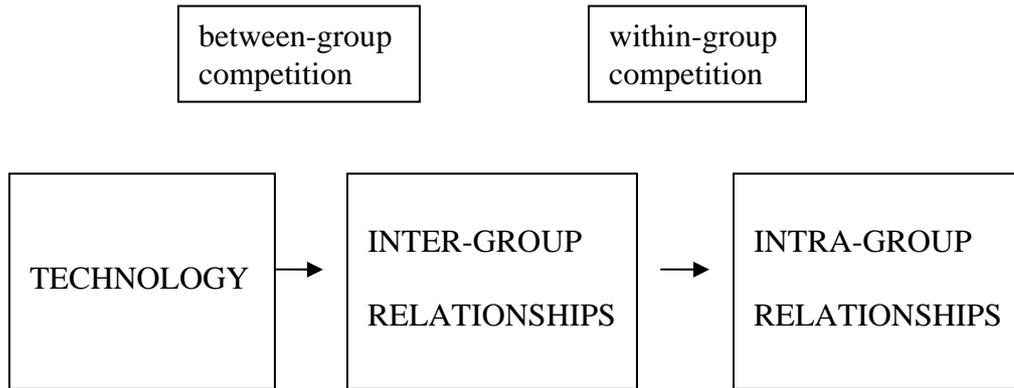


FIG. 2

In sum, individuals affect institutions, so that the latter turn out to be micro-founded (the individual participation constraint for inter-group relationships and the within-group interaction among individuals for intra-group relationships), and institutions affect individuals, so that the latter turn out to be macro-founded (property rights and the beliefs system ensuring they are self-enforcing are determined by inter-group relationships). In other words, the perspective adopted amounts to taking the point of view of an individual who is neither the beginning nor the end of the analysis. Instead, he is ‘caught in the middle’, with higher-level causal mechanisms (in their turn the outcome of many individual actions) operating, as it were, ‘behind his back’. This ‘real man’ perspective echoing the opening sentence of Marx’s *Critique of Political Economy*¹¹, together with the full recognition of inter-group relationships as

the present context structure-induced power asymmetries are not the exogenous drivers of the whole argument, with the non trivial implication that a change in property rights, as a consequence of adopted view of the surplus-value creation process, does not automatically produce the intended changes in technology and individuals.

¹¹‘In the social production of their life, men enter into definite relations that are indispensable and independent of their will, namely relations of production that correspond to a definite stage

institutional rules, is the reason why the multi-level competition framework is assumed to work differently from the received approach of the group selection literature (see footnote 6).

2.1. The institutional structure of (collective) production and distribution

Equipped with the above methodological and terminological material, we are now in a position to state and demonstrate the three propositions needed to derive the results anticipated in figure 1. Before doing so, however, it is useful to specify the timing structure and, for the sake of simplicity, setting aside the relationship between price and quantity decisions.

TIMING: individuals live only the two periods necessary for the investment process, the ex ante period ($t=0$) and the ex post period ($t=1$), but leave their status (wealth and skills) to their (one for each) offspring.

ASSUMPTION 1: production is assumed to consist of producing a single item.

ASSUMPTION 2: investments are always worth undertaking (demand prices guarantee a surplus-value with respect to independent investments).

PROPOSITION 1: when the best investments are non separable either ex ante or ex post, inter-group relationships are conflictual, the surplus-value realization process is a between-group competition push, and intra-group relationships are hierarchical and centralized (fig.3, box to the upper left).

of the development of their productive forces. The sum total of these relations of production constitutes the economic structure of society (...) to which correspond definite forms of social consciousness. (...). At a certain stage of their development, the material productive forces of society enter into contradiction with the existing relations of production, or –what is but a legal expression for the same thing- with the property relations within which they have been at work hitherto. From forms of development of the productive forces these relations turn into their fetters.’ (Marx, 1859, pp. 8-9). As shown by the role given to the micro-foundations of institutions, this of course is not to make the nonsensical claim that the latter are not made up of individuals. In this respect, Marx was in fact anticipating the evolutionary notion of unintended consequences subsequently contrasted to the notion of conscious design embraced by the ‘state of nature’ tradition. Perhaps not very originally, this historically-minded relation of mutual determination between individuals and institutions, which Marx conceived in terms of dialectics but can now also be construed in terms of co-evolution, is in my view the most enduring legacy of his contribution to social theory. Relatedly, and to anticipate the results somewhat, note the quotation-illustrated possibility of stable inefficient equilibria stemming from the self-reinforcing interaction between ‘productive forces’ (technology) and ‘relations of production’ (property rights).. The point has also been made by Pagano (1991) in order to provide an alternative explanation for the variety of existing capitalistic organizations. See also Hodgson, 1998a.

When the most productive investments create a surplus with respect to independent investments *both ex ante and ex post* (fig.1, case d), they can never profitably stay independently on the market but, as a consequence of technological and organizational non separability, they must be undertaken collectively in both the inception and realization periods (with the introduction of a new machine and on the job training, for example). Hence, owing to strategic complementarity, the identity of the parties is relevant both before and after decisions become operative. Accordingly, since groups must be in place at $t = 0$ and last until $t = 1$, the group value maximizing pressure of between-group competition implies that cost minimizing groups emerge from *conflictual* inter-group relationships (groups form and become extinct through mutual assimilation or absorption, never dissolving into their individual constituent parts).

Consequently, the surplus-value realization process consists of appropriating resources from other groups (a *between-group competition push* as when profit derives from price competition), while intra-group relationships are *hierarchical* and *centralized*. The pressure of within-group competition induces the decision maker, (the offspring of) the winner of the previous conflict, to take control of the entire investment process, and to appropriate the entire surplus. Subordinates, given their ‘unconnected’ beliefs, are therefore left with what they can get from totally independent participation in the production process (subsistence wages, to anticipate the literal application in the next section). Recruitment, on the other hand, is centralized because it does not occur in the presence of equally attractive outside options, and, in this sense, the entire situation can be said to imply coercion.¹²

¹² I use the term ‘*coercion*’ to denote a situation where subordinates have no outside options and cannot undertake any of the investments by themselves, but of course physical coercion is not implied. *A fortiori*, this is true of the situation where subordinates have outside options but cannot begin or realize the investment independently (propositions 2 and 3), where I use the term ‘*force*’. Even so, because they follow from power asymmetries in the sense that one party is provided with the money and the skills for an autonomous participation in the production process while the other, lacking them, can only enjoy a heteronomous participation, it seems to me that such situations are substantially different from the one in which individuals have outside options and, most importantly, are able to make the investment by themselves both at inception and realization, justifying the Marx-inspired attempt to look for what is hidden under the cover of the formal logic of exchange among given individuals. Of course, as shown by its time-honored tradition in philosophy and politics, as well as in economics, this logic is by no means wrong, for it is always possible to find a counter-factual situation with respect to which any observed institutional arrangement can be seen as a result of Pareto-efficient exchanges in an appropriately defined state of nature. As the quotation from Mokyr (2002) in the next section makes clear, however, the problem is that this may not be always relevant to understanding what actually happens in the real world. A thoughtful and famous, but not sufficiently influential, critique of Pareto-efficiency has been conducted by Calabresi (1991).

PROPOSITION 2: when the best investments are non separable *ex ante* but are separable *ex post*, inter-group relationships are fission-fusion with commitment, the surplus-value realization process is a between-group opportunity pull, and intra-group relationships are egalitarian and decentralized (fig.3, box in the middle).

When the most productive investments create a surplus with respect to independent investments *ex ante but not ex post* (fig.1, case b), they must be undertaken collectively at inception but can be realized independently – as, for instance, when the direction of knowledge development is set by the scientific community but innovations can be made by individual researchers. In this case, the identity of the parties matters before the decisions taken become operative but not afterwards, so that groups must be in place at $t = 0$ but not at $t = 1$ (in the absence of the team production feature, technological and organizational costs are minimized with self-organizing producers). Hence, the group value maximizing pressure of between-group competition implies that the most successful groups emerge from *fission-fusion with commitment* inter-group relationships (groups continuously form and disband into their constituent parts through a rule-based association of single individuals covering both periods). The surplus value realization process thus involves between-group niche competition (a *between-group opportunity pull*, as when profit derives from product differentiation, for example), while intra-group relationships are *egalitarian* and *decentralized*. The commitment being intended to prevent would-be dominant individuals from appropriating the entire surplus by realizing the investment independently (as exemplified by the non compete clauses commonly used in partnerships, to anticipate an application from the next section), nobody is provided *ex ante* with the money and the skills for an autonomous participation in the production process, so that the decision-maker is the whole group. On the one hand, the investment process is therefore regulated by a consensual decision making enforced by ‘connected’ beliefs, while the surplus-value is shared according to inter-subjectively defined rules (and, within the constraints of commitment to authority, everybody is autonomous *ex post*).¹³ On the other hand, recruitment is decentralized in the

Recent studies which forgo the logic of exchange are Piccione and Rubinstein (2006), and Acemoglu et al. (2005), while that logic is applied to the ‘dark side of force’ by the literature known as the economics of conflict (Hirshleifer, 2001).

¹³As always, egalitarianism is not to be understood as perfect equality, and there is room for conceiving rewards and punishments as attenuating the depressing effect on individual incentives. The point is the inter-subjective nature of the process by which possibly different shares of the surplus are allocated to group members. The already cited Hodgskin (1825, p.83) puts the matter in the following terms when figuring out the rules of just distribution in his

sense that previous groups regularly disband into their constituent parts and the new ones are formed by single individuals ‘choosing’ among equally attractive outside options.

PROPOSITION 3: when the best investments are separable *ex ante* but not *ex post*, and the (net) value of a truncated investment of this kind is higher than the (net) value of the available investments separable both *ex ante* and *ex post*, inter-group relationships are fission-fusion without commitment, the surplus value realization process is a within-group competition push, and intra-group relationships are hierarchical and decentralized. Otherwise, proposition 2 applies (fig.3, box to the lower right).

When the most productive investments create a surplus with respect to independent investments *ex post but not ex ante* (fig. 1, case c), they can be undertaken independently at inception but must be realized collectively – as, for instance, when a given product is designed and assembled. The identity of the parties, in this case, matters only after the decision taken becomes operative, while it may or may not matter before, the outcome depending on whether or not the above condition holds. If it does (as may be the case with subsidized middle-level education or immigration, for example), since groups must only be in place at $t=1$, the pressure of between-group competition implies that the most successful groups arise from *fission-fusion without commitment* inter-group relationships (groups form and disband through a one-period unregulated association of single individuals).

In this case the surplus-value realization process amounts to appropriating occasional benefits from cooperation (a *within-group competition push* – as when profit derives from squeezing the share of the other group members), while intra-group relationships are *hierarchical* and *decentralized*. Decision-makers are (the offspring of) previously successful surplus-takers and the pressure of within-group competition drives them to dominate realization of the investments and to appropriate the surplus. Subordinates, in effect, have no reason to expect better terms elsewhere, but they cannot undertake the

anarchic, ‘utopian’ socialist society: ‘There is no principle or rule, as far as I know, for dividing the produce of joint labour among the different individuals who concur in production, but the judgment of the individuals themselves; that judgment depending on the value men may set on different species of labour can never be known, nor can any rule be given for its application by any single person.’ Shortly afterwards, he singles out the conditions under which market-based distribution would be acceptable: ‘*If all kinds of labour were perfectly free*, if no unfounded prejudice invested some parts, and perhaps the least useful, of the social task with great honour, while other parts are very improperly branded with disgrace, there would no difficulty on this point, and the wages of individual labour would be justly settled by what Dr. Smith calls the “haggling of the market.”’ (ibid., pp. 85-86, emphasis added).

investment independently and so, again because of their ‘unconnected’ beliefs, are forced to accept being paid the value of their truncated investment (given the surplus-value realization process, they do not get more, while, owing to the above condition, they do not get less).¹⁴ In this case too, finally, recruitment is decentralized because new groups are formed by individuals coming from the independent investments period, so that they still ‘choose’ the group among equally attractive outside options.

If, conversely, the above condition does not hold (as may be the case with costly elitarian education, for example), the pressure of between-group competition implies that the most successful groups arise from *fission-fusion with commitment* inter-group relationships, so that Proposition 2 applies (the only difference being that they form at $t=1$ with the commitment implicitly covering $t=0$, instead of being formed at $t=0$ with the commitment explicitly covering $t=1$).

¹⁴Of course, the most probable situation is one of subordinates in excess supply, so that the standard argument of the ‘reserve army’ applies. Remarkably, however, the situation is theoretically consistent with free entry and full employment (after which the independent sector is empty and the condition given in the text becomes meaningless, prompting a change in the resulting inter-group relationships and the associated surplus-value realization process). With fission-fusion without commitment inter-group relationships and a within-group competition push surplus-value realization process, in fact, groups are so ephemeral that, no matter how much entry is free, between-group competition does not wipe out profits, which stand instead in an inverse relation with wages because of within-group competition. If anything, the problem is why more egalitarian (and more efficient) groups do not emerge, and the simple answer is that, as long as the condition of the text holds, they are more costly.

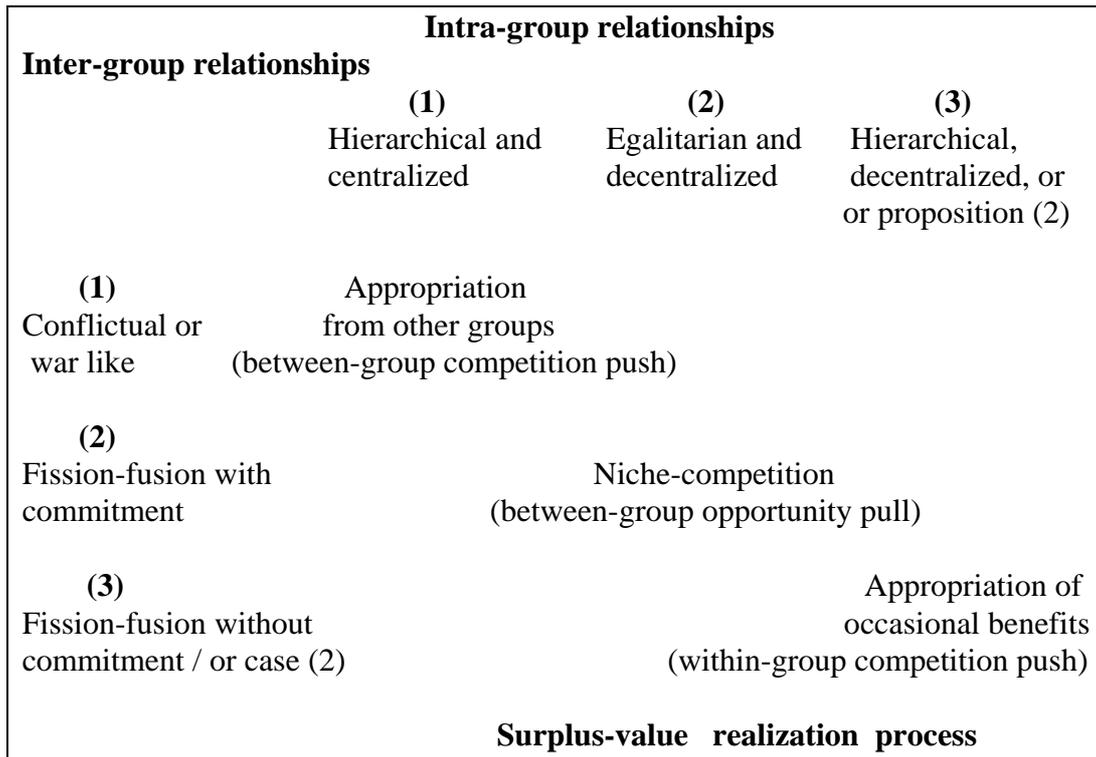


FIG. 3

2.2. Discussion: the role of inter-group relationships in institutional analysis

Contrast the above results with the fourth possible case, the one in which the most productive investments are separable *both ex ante and ex post* (fig. 1, case a). Clearly, in this case the identity of the parties does not matter at any stage of the investment process and no surplus is created by cooperation. Hence investments must be undertaken independently both at inception and realization (as in traditional agriculture or craftsmanship, for example). Obviously, therefore, groups never form, and inter-group relationships collapse into intra-group relationships.

As a consequence, to the extent that ‘complete’, spot market intra-group relationships successfully restrain natural anti-competitive tendencies (corporativism and monopolistic pricing, for example), the surplus-value realization process is a *within-group opportunity pull* (profit is the value of individual contribution). Accordingly, the institutional structure of production and distribution can be fully rationalized as a way to ensure that individual

rewards coincide with the value of individual contribution, which in its turn is determined by what individuals can command elsewhere. Naturally, the situation is unfortunately (and possibly unfairly) consistent with some individuals appropriating all the gains from trade, but to the extent that this kind of investment is worth undertaking, every individual has the appropriate incentives to make. In sum, as importantly shown by the Fundamental Welfare Theorems, distribution has no impact on efficiency, and, as equally importantly implied by Samuelson's (1957, p. 894) statement that in general competitive equilibrium 'it does not really matter who hires whom', neither power nor conflict is involved.

This is not the case when surplus-value is created by the collective undertaking of non separable investments. Depending on the nature of inter-group relationships and the associated surplus-value realization process, there may be a tension between the group value maximizing pressure of between-group competition and the decision-maker's value maximizing pressure of within-group competition. When this is the case – that is, when the group is divided between decision-makers and subordinates – the investment process is managed (*in toto* or in part) to maximize the former's share of the surplus, and the latter are left with what they can get from independent participation in the production process (implying inefficiency and exploitation, proposition 1 and proposition 3, first part). When this is not the case – that is, when the decision-maker is the whole group – the investment process is managed to maximize the profit of the group and individual shares are determined according to inter-subjectively defined sharing rules (possibly implying efficiency without exchange among individuals, proposition 2 and proposition 3, second part).

In no case can the institutional structure of production be explained in terms of an efficient alignment between individual contributions and individual rewards as in the new-institutional literature's stretching of the logic of exchange. The result owes as much to the dropping of the assumption of no wealth effects as it does to the dropping of a partial equilibrium perspective.

When there are no wealth effects, as is especially the case for the hold-up literature on vertical integration (see Williamson, 1985, for transaction cost economics, and Hart, 1995, for the incomplete contracts approach), groups can be treated like single individuals and inter-group relationships again collapse into intra-group relationships. The surplus-value realization process can thus be brought once again under the comfortable blanket of the conceptual framework of a within-group opportunity pull, and (hierarchical) intra-group relationships can be seen as a solution to the incentive-depressing lack of coincidence between individual contributions and individual rewards deriving from opportunistic behavior. When the situation is that of a single group faced with the prospect of enjoying the advantages of team production, as is especially the case for the free-riding literature pioneered by Alchian and

Demsetz's 1972 paper (see also Alchian, 1987), inter-group relationships fall outside the analysis from the outset and, again, intra-group relationships (the emergence of a centralized monitor specializing in metering individual productivity on the organizational side, and the inversion of the market-based relationships between productivity and rewards on the distributional side) can be thought of as a way to reinstall a within-group opportunity pull, overcoming the complications arising from team production¹⁵.

In addition, crucial in both cases is '[t]he presumption that "In principle there were markets" (...)', as Williamson (1985, p. 87) puts it. Ex ante, this general competitive equilibrium 'state of nature' with given individuals is the tool necessary to evaluate comparative advantages and guarantee that property rights flow to those who are able to make the most efficient use of them. Ex post, though the details of the process are not the focus of the analysis (see Battistini, 2001), competition guarantees that the ensuing power positions are not abused. So the famous statement that 'Economics has gained the title Queen of Social Sciences by choosing solved political problems as its domain' (Lerner, 1972, p. 259) is confirmed while the equally famous metaphor of a competitive economy composed of 'islands of conscious power in this ocean of unconscious cooperation' (Robertson, 1923, p. 85) is borne out.

However, to the extent that a surplus-value realization process consisting of a within-group opportunity pull and the associated principle of individual contribution as a positive principle are of limited practical relevance (though highly attractive were they true), more than a simple shift from the exchange of commodities to the exchange of property rights is required to provide a full explanation of the institutional structure of production.¹⁶ On the

¹⁵ Because of its role in the paper, let me show how the framework proposed undermines the Alchian and Demsetz's monitor solution. Though the real world observation that monitoring is actually performed by fixed wage workers and, increasingly, by cheap technical devices should be sufficient, this is also the opportunity to discuss the enforcement of the rules governing the division of labor within the group (with recruitment enforcing the rules governing the distribution of the surplus). When inter-group relationships and the associated surplus-value realization process are such that intra-group relationships are hierarchical, the dominant individuals can take the desired amount of effort from subordinates by direct monitoring, so that the solution is disrupted by the (exploitation-driven) monitors. When inter-group relationships and the associated surplus-value realization process are such that intra-group relationships are egalitarian, punishment of violations of the group's norms can be decentralized to the group members, so that the solution is disrupted by the (sharing-driven) monitored. Inter-subjectively defined sharing rules, indeed, mean that costs and benefits of a particular task crucially depend on the agreement of the other group members. Not surprisingly, in other words, outside the state of nature the collective action problem is more often than not solved by (endogenous) power relationships.

¹⁶ As demonstrated by empirical analysis of vertical integration (Joskov, 1985), outside vanishing independent sectors, the individualistic treatment of groups can be insightful when

other hand, to the extent that the same type of criticism can be made of the opposite, conflict-based mono-causal approach, an analysis aimed at such an explanation cannot even be based on given power structures. Accordingly, the perspective developed in the previous section can be seen as an attempt to develop a general framework where the case of pure conflict (the world Marx was living in) and the case of no conflict (the ‘win-win’ theoretical attractiveness of exchange) are important special cases. Since in effect neither efficiency nor power is the sole driver of the argument, both the separation between distribution and efficiency typical of so much economics and the ‘romantic voluntarism’ of certain Marxian analyses is avoided, and this is crucial for appreciating the role of efficiency-enhancing distribution policies.

3. Applications and extensions

This section employs some stylized facts about firms to illustrate past and present applications of the propositions stated in the previous section (fig.4).

Accordingly, the box to the upper left pertains to the classical firm. The main feature of the industrial revolution was the rise of the factory, that is, the grouping of previously separate branches of trade under one roof. In the terms used here, this means that investments were non separable either ex ante or ex post, so that they could not profitably stay independently on the market either at inception or at realization. As a consequence, inter-group relationships were conflictual and the surplus-value realization process was a between-group competition push (as shown by the early obsession with increasing the volume of production and lowering prices to appropriate market share from competitors). As for intra-group relationships, works by Ure (1835), Babbage (1832) and Braverman (1974) leave little doubt that they were hierarchical (both in the organizational sense that investments were intended to diminish the skill content of workers’ jobs, and in the distributional sense that wages were fixed at subsistence), and centralized (in the sense that recruitment occurred without meaningful outside options from the outset: for example, a boy of humble origins from Sheffield was almost certainly bound to end up making knives like his father).

In sum, as the following quotation from Mokyr (2002, p.128, emphasis added) makes clear, Marx was not alone in perceiving the impact of historical phenomena operating ‘behind the backs’ of individuals so as to cast doubts on the unfettered explanatory role of Pareto-efficient exchanges while not forgoing analysis of the workings of an economic logic: ‘For the economist, it

the ‘thing’ factor predominates over the human factor, as in relationships between firms or states, for example.

is a logical puzzle why, in the absence of coercion, workers would voluntarily agree to work in factories if doing so reduced their utility. Many workers were paid a factory or a coal-mine premium as a compensating differential, and workers were provided with benefits such as housing, schooling for their children, and even milch cows (...). Insofar as this was inadequate, however, factory owners, especially in the countryside, relied on pauper children and orphans 'borrowed' from workhouses. Beyond that, however, the *economic logic* of the Industrial Revolution implied that workers might end up working in factories even if it made them worse off than they were before (*though not worse off than if they stayed at home*). The reason is that opportunity cost of many of these potential factory employees was set by what they could earn in the cottage industry. This alternative declined rapidly because of factory competition and by 1850 was, in most cases, no longer available. The factories, by relentlessly driving down the price of manufactured goods, reduced the earnings of those working at home and thus forced them (or their offspring) to abandon their cottages and seek work in the mills or to emigrate'.

Whilst a non literal interpretation of the previous case can be extended to contemporary high-volume, low-price mature industries (especially in developing countries where 'free market' mechanisms are more pristine), the box in the middle can instead represent the case of partnerships, with their typical non compete clauses, up-or-out promotion rules, flat hierarchies and profit-sharing schemes (see Rayan and Zingales, 1998, and Levin and Tadelis, 2005, for efficiency-based explanations). As a consequence of investments which must be undertaken collectively at the beginning but can be realized independently (such as collective specialization in a new professional field like, say, class action), inter-group relationships are fission-fusion with commitment (up-or-out promotion rules, non compete clauses). In turn, the latter can be seen as implying a between-group opportunity pull surplus-value realization process (profit derives from niche-competition).¹⁷ Flat hierarchies and profit sharing, then, are obvious examples of egalitarian intra-group relationships, while their decentralized character is due to the relative mobility of professionals' 'labor markets'.

Finally, the box to the lower right is occupied by the 'putting-out system'. Since this consists of the assembly of separate parts of the product, investments can stay independently in the market at inception but not at realization. To the extent that this system was the first step in pushing independent crafts out of the market, the surplus-value realization process was a within-group competition push (putter-outers' profits arose from interposing

¹⁷ After their detailed analysis of the specialization of lawyers in law firms, Garricano and Hubbard (2003) conclude that 'Lawyers are more likely to work at the same firm with lawyers in their own field than with lawyers from any other field' (p.30).

a new figure between independent producers and consumers, while the piece-rate wage system is an example of subordinates left with the value of a truncated investment), in turn generated by fission-fusion without commitment inter-group relationships (there was no point in having stable groups, and workers typically could sell their produce to multiple ‘putter-outers’). Intra-group relationships, on the other hand, were hierarchical even in the organizational sense, and they were decentralized, as evidenced by the following quotation from Marglin (1974, p. 81): ‘The minute specialization that was the hallmark of the putting-out system only wiped out one of two aspects of workers’ control of production: control over the product. Control of the work process, when and how much the worker would exert himself, remained with the worker until the coming of the factory’.

Closer to our times, another example is, for want of a better term, the contemporary ‘global’ firm viewed in its simplest version as a relation between one manager (the headquarters) and a group of workers (the subsidiaries). As in the putting-out system, investment can be undertaken independently at inception but must be realized collectively (as implied by the fact that even relatively simple products are the result of a myriad of small components made in different plants often located in different parts of the world). To the extent that the condition given in proposition 3 holds, inter-group relationships are fission-fusion without commitment and the surplus-value realization process is a within-group competition push (as especially demonstrated by private equity firms). On the other hand, intra-group relationships are hierarchical both in the organizational sense (as shown by the new forms of separation between conception and execution embodied in the growing indifference as to where production actually takes place) and in the distributional sense (as confirmed by the 25-year long increase in the earning gap between skilled and unskilled labor¹⁸). Finally, the super-mobility imposed on relatively unskilled manual or intellectual workers means that they are also decentralized.¹⁹

¹⁸ Admittedly, all the main explanations of this gap in the systems of the English-speaking countries take as their benchmark the equilibrium condition of wages equal to marginal productivity (or ability), a procedure which this paper shows to be unqualifiedly accurate only in the case of independent production. This is the case whether these explanations point out a distance from such a condition due to ill-managed principal-agent relationships (Bebchuk and Fried, 2003), whether they recognize instead a rapprochement due to the increase in the ‘priced’ (non firm-specific) part of managerial ability (Murphy and Zàbojnik, 2004), or whether they document a technologically-driven shift in the equilibrium (Autor, Katz, and Kearney, 2006).

¹⁹ For the sake of realism, in a more elaborate version, managers’ investments can be interpreted as being of type b (fig.1) with respect to other managers, but since the solution to their collective action problem is self-enforcing, they remain of type c with respect to workers. Therefore, whilst inter-group relationships among (groups of) managers are fission-fusion with commitment and the corresponding surplus-value realization process is a between-group

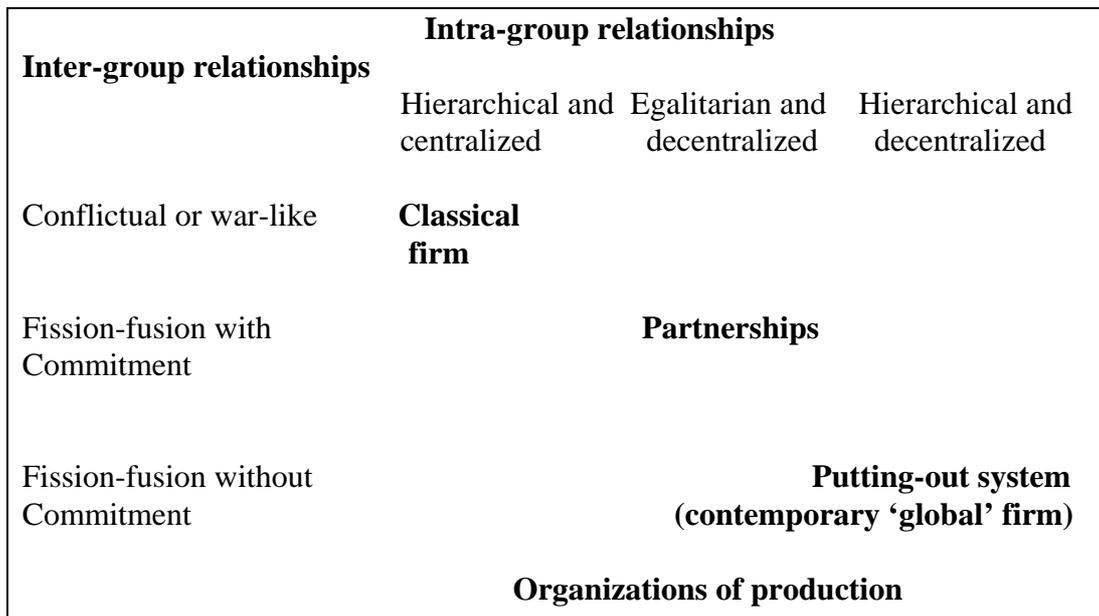


FIG. 3

To conclude this section providing real examples of the proposed theoretical framework, the last point to be discussed is the problem of institutional change. On the one hand, the industrial revolution and the advent of information technology have both been such big pushes that the shift from the putting-out system to the classical firm, and that from Keynesian Taylorism to the contemporary 'global' firm, can be easily accommodated. Indeed, they strengthen the evolutionary characterization of the paper because of the analogy with the biological concept of 'punctuated equilibria' (Eldredge and Gould, 1972). As suggested by Mokyr (2002), a dramatic shift in the relative importance of human capital vs. physical capital notwithstanding²⁰, in both cases the driving force may have been, at least in part, the impact of

opportunity pull, their relationships with workers remains fission-fusion without commitment, and the surplus-value realization process remains a within-group competition-push. And, of course, the phenomenon is not confined to multinational firms but is part of the general trend toward outsourcing and sub-contracting.

²⁰ Interestingly, Piketty and Saenz (2003) provide evidence that, whilst at the beginning of the century the top earners were capital earners, they are now wage earners. Relatedly, as emphasized by the new-growth theories, when coupled with imperfect capital markets (contractual incompleteness) and the limited individuals' capacity to accumulate human capital, this shift offers the most convincing argument for efficiency-enhancing distribution policies in a methodologically individualistic framework.

technology on the cost of moving people versus the cost of moving knowledge, and in both cases – one can argue – workers' conditions may have worsened although the direction of such movements has been two-way.

But, on the other hand, other complex determinants such as 'ideologically' and 'culturally' driven institutional changes (the unions and the stock exchange, for example) have played a comparable role in the period. Because knowledge is not only technical but also social, these considerations highlight the main theoretical deficiency of the framework proposed, namely, the interaction between institutional structures and the associated belief systems.

The complexity of the problem suggests that it should be left to future research, but the reason why it should be investigated is obvious. In the language of the game-theoretic approaches to institutions (Aoki, 2001, Bowles, 2004; Greif, 2005; see also North, 1990), inter-group relationships are the equilibrium of the (previous generation) game between groups and, at the same time, determine the rules of the game within the group and the sustaining beliefs system. Intra-group relationships, instead, are the equilibrium of the (present generation) game within the group. But, whilst in this paper the rules of the game between groups (players, strategies and pay-offs) have been taken to be determined by technological conditions, one can also speculate that intra-group relationships, depending on whether or not they maximize group value, may have the effect of either confirming or disrupting the shared beliefs motivating the equilibrium play, thus either confirm or inducing a change in the rules of the (next generation) game between groups (with only the former case being, so to speak, a stable macro-founded institutional equilibrium).

Methodologically, this acknowledgment of the recursive structure of the relevant games may close the causation circle at the root of the approach proposed between methodological individualism and holistic structuralism: technological conditions (and individuals) affect institutions (inter-group relationships), which affect individuals (property rights and beliefs), which affect institutions (intra-group relationships), which affect individuals (beliefs and property rights), which finally restart the process by affecting institutions (inter-group relationships).

And as regards policy implications, of course, from the results of the previous section it follows that exploitation is an obvious candidate for the above possibility of a change in beliefs, to which correspond different coalitions across groups, different rules of the games between groups and, consequently, different inter-group relationships and different surplus-value realization processes (the idea is by no means new). As an informal illustration, indeed, in the case treated in proposition 1, because of the combination of this process with democracy, in Western Europe this has historically taken the form of a 'grand bargain' among workers, employers and the state. In the terms used

here, this has meant that the conflictual nature of inter-group relationships has been mitigated to such an extent that between-group competition has been impeded in its function of determining the process of group formation and extinction (life-time employment and state-sponsored bail outs, for example), but not to the point that it has been unable to display the organizational virtues of (output) markets thanks to a relatively decentralized price system (recall demand falls outside the scope of the paper). In this sense, and at the risk of over-simplification, the entire situation can be conceptualized as composed of only one super-group, with egalitarian and decentralized intra-group relationships implementing a borderline surplus-value realization process basically consisting of sharing within the super-group the gains from a coordinated between-group opportunity pull (consider the golden rule of wages equal to productivity, the welfare state, the patent system, and protection from international competition, for example)²¹. In the case treated in proposition 3, instead, this seems to take the form of increasing support for universal income security, with a quite wide range of possible practical implementations (see, for instance, Van Parijs and Vanderborght, 2005). In terms of the paper, this may amount to reversing the condition given in the text so that proposition 2 (in the implicit version) applies instead.

In both cases, to the extent that proper attention is paid to the interaction between the micro-foundations of institutions and the macro-foundations of individuals, the possibility that the associated distribution policies qualify as efficiency-enhancing stems from replacing the original conflictual surplus-value realization process with the appropriate common interest surplus-value realization process. And, in both cases, assuming that the new-group value maximizing change in beliefs does occur (from ‘I earn what I produce as measured by my market value, so nobody will follow me in changing strategy’ to ‘in different times and places (sectors) people earn a possibly different share of what they have contributed to produce, so there will be a critical mass of strategy changes’, for example), the ensuing distribution struggles do not necessarily raise the collective action problem as usually envisaged. From the point of view of workers, indeed, the same struggles are a within-group competition push with respect to employers but, with respect to other (groups of) workers, they are in effect a between-group opportunity pull

²¹Notably, the same ‘super-group’ characterization is even better suited to real communist societies, which indeed enjoyed comparable growth in the same period but proved unable to adapt to new technological conditions because the absence of political freedom and the grip of the state on the economy implied hierarchical and centralized intra-group relationships and a consequent within-group competition push surplus value realization process.

fuelled by investments which must be performed collectively at inception but can be realized independently (see footnote 19)²².

4. Conclusion

This paper has shown that joint consideration of the theory of the firm and the theory of distribution in light of an investment-based theory of value casts doubts on the functioning of a market economy as conventionally conceived.

The basic reason for this is that, particularly when surplus-value is created by cooperation, the logic of exchange among given individuals is not the only plausible economic logic, and another one, driven by the evolutionary principle of differential, multilevel profit realization, can be conceived.

The other good news is that these two logics need not be incompatible, for they follow from two different but equally powerful tendencies of human behavior –that of growing lazy and that of making progress, or aggrandizing. Hence, as currently happening in debate about the determinants of the growth of knowledge, which logic to embrace is not an issue of right or wrong but depends on the level of the analysis.

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²² Given the impressive amount of anthropological and experimental evidence on endogenous preferences, I stress this ‘no new man’ requirement for change or efficiency-enhancing distribution policies more for the sake parsimony than for scepticism. An intriguing issue relates to the role of science and especially social science in being influenced, and in its turn influencing, the above interaction between institutional rules (practice) and shared beliefs (theory). See Douglass, 1986, Assman and Hinkelammert, 1989, and North, 2005.

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