



**Abstract:** Taking value as the socio-economic analogue of biological or cultural fitness, in this paper I study the interaction between individual-level and group-level explanatory mechanisms by considering what kind of intra-group relationship obtains given the nature of inter-group relationships. Specifically, I show that when value arises from appropriating resources from other groups, inter-group relationships are conflictual or war-like, with the consequence that intra-group relationships are centralized and hierarchical. When the value creation process involves niche-competition between groups, inter-group relationships are fission-fusion with commitment and intra-group relationships are decentralized and egalitarian. Finally, when value derives from appropriating occasional benefits from cooperation, inter-group relationships are indistinguishable from intra-group relationships, and the latter are decentralized and hierarchical. Interpreting intra-group relationships as different forms of social order and the division of labour yields applications to political and economic institutions. Exploitation, a concept defined in the paper without recourse to the labour theory of value, is shown to be consistent with some of these institutions and, particularly, with the absence of explicit coercion.

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## 1. Introduction

Despite their wide variety, two elements occur in virtually every definition of institutions: that they are man-made and that they refer to distinct groups of people. Traditionally, the first element – human agency – has been emphasized by the economic approach, where social outcomes are explained in terms of the interaction among given individuals. The second – the power of structures – has instead been illuminated by sociology, where individual behavior is explained in terms of the primacy of given structural constraints such as shared beliefs, internalized norms and cognitive scripts.<sup>1</sup>

Whilst the need to combine the two perspectives has long been recognized by modern sociology, the only formal treatment of the interaction between individual-level and group-level explanatory mechanisms has been provided by those biologists, anthropologists and economists who believe in group selection (Sober and Wilson, 1998; Enrich, 2004; Bowles et al., 2003). Here, group-beneficial-but-individually-costly traits (i.e., non self-interested cooperation) can evolve under the conditions favoring group selection over individual selection. As models based on various modifications of the Price equation (Price, 1970), such conditions are essentially those that increase trait variance among groups and reduce trait variance within the group, so that the pressure of the former is stronger than that of the latter (e.g. egalitarian distributive institutions).<sup>2</sup>

When such models are used, the analysis is driven by the functionalist assumption that groups are optimally adapted to their environment and that the benefits of cooperation are equally shared among group members. A society with a higher proportion of altruism will indeed produce more (altruistic) replicas compared to a society with a higher proportion of selfish types, and therefore will eventually drive the latter to extinction.

As pointed out by the biologist Alexander (1987), however, in the case of humans the main hostile forces driving evolution have been other groups of humans, so that the issue of the interaction between individual- and group-level selection mechanisms cannot be divorced from that of conflict and exploitation both within and between groups. On the other hand, in order to know how those groups are internally organized – that is, their economic and political institutions – it seems sensible to know what other groups are doing, which in turn raises the question of the prevailing type of competition and the corresponding way in which value – the socio-economic analogue of fitness<sup>3</sup> – is created.

Accordingly, in this paper I analyse the interaction between individuals and higher-order entities such as groups<sup>4</sup> in the simplest way: that is, by considering what kind of intra-group

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<sup>1</sup> There are of course exceptions to this rigid classification, the best known being the thought of Weber. In general, however, the border between the two disciplines has been set in terms of the two methodologies rather than in terms of the object of the analysis, as shown by Durkheim's treatment of suicide as a social fact (Durkheim, 1897), or by Brennan and Tullock's handling of military tactics in terms of the free-rider problem (Brennan and Tullock, 1982). As for institutions, luckily, there is instead increasing acknowledgment of the need to integrate methods from different disciplines in order to gain better understanding of the same subject. See Hall and Taylor (1996), Hodgson (1998), Greif (2006), Powell and DiMaggio (1991), and Scott (1994).

<sup>2</sup> Interestingly, the nature of inter-group relationships is an important parameter in the works cited. Specifically, whilst fission-fusion mechanisms are necessary for biological evolution because, unless groups periodically re-form, the selfish type will eventually prevail within the group, frequent inter-group conflicts accelerate cultural evolution, since the most cooperative (and most successful) cultures can spread through conquest and assimilation. As will become clearer below, dropping the functionalist assumption and taking value as the determinant of what is most fit to evolve socially, the nature of inter-group relationships can be shown to give rise not only to cooperation but also to conflict and exploitation.

<sup>3</sup> I conceive socio-economic evolution in terms of a competitive value creation process occurring both within and between groups, rather than in terms of competitive reproduction within the same species as evolutionary biologists and anthropologists do. The sources of value I consider are 'bioeconomically' inspired, however. In the terminology of Ghiselin (1995), they correspond to opportunity pull and competitive push. See the next section.

<sup>4</sup> Drawing on sociology, I define higher-order entities as entities which are different from the sum of their components. While the terminology is deliberately flexible – for example, 'groups' may refer to individuals (as groups of organs), to society (the group of individuals under consideration), or, as most often in the paper, to aggregations intermediate

relationships – ‘how groups are internally organized’ – obtains depending on the nature of inter-group relationships. or ‘what other groups are doing’.

In particular, I show that when value arises from appropriating resources from other groups, inter-group relationships are conflictual or war-like, with the consequence that intra-group relationships are centralized and hierarchical. By contrast, when the value creation process involves niche-competition among groups, inter-group relationships are fission-fusion with commitment, and intra-group relationships are decentralized and egalitarian. Finally, when value derives from appropriating occasional benefits from cooperation, inter-group relationships are fission-fusion without commitment, or indistinguishable from intra-group relationships, and the latter are decentralized and hierarchical.

The alternative between hierarchy and egalitarianism should be understood in both the organizational and the distributional senses because it refers to how decisions are taken (by fiat or by consensus) and to how surplus is distributed (by appropriating or sharing). The alternative between decentralization and centralization, instead, should be understood according to whether or not recruitment and enforcement are spontaneous.

Thus, the paper combines a human agency perspective – the intra-group interaction among individuals determines social structures such as institutional rules and enforcement mechanisms – with a structural perspective – the inter-group interaction among structures determines the social treatment of individual natural differences.

The rest of the paper is organized as follows. In the next section I illustrate the argument, establishing links with contemporary institutional thought. Interpreting intra-group relationships as different forms of social order and the division of labour, section 3 provides applications to political and economic institutions. Finally, section 4 briefly concludes.

## 2. Value, distribution and exploitation

According to the neo-Ricardian critique, neo-classical economics mistakenly applies the categories of exchange to production, a phenomenon which is different in nature because of the transforming of inputs into output over time, with the consequent characterization of variables in terms of flows rather than stocks. This in turn is seen as fundamentally deriving from a subjective theory of value based on utility, at the expense of an objective theory of value based on cost.

According to the Marxian critique of the ‘abstract man’, the same point can be made *a fortiori* concerning those new-institutional analyses based on the Coasean insight that the institutional structures of production – and indeed institutions in general – can be explained in terms of a ‘meta-exchange’ of property rights between individuals not affected by wealth effects (Coase, 1937; 1960; 1992). The most illustrative example is the asymmetric information explanation of liberation from slavery (Barzel, 1997, ch. 7). By concealing the true cost of his effort, the slave could save valuable resources and, perhaps, even borrow the amount needed to buy back his freedom. While one can be totally persuaded that things may have gone like this, and probably should have done so, the problem is that they did not. What is missing is the effect of society on individuals (how the slave came to think that he did not deserve to be a slave) and that of history on society (how the mode of production shifted from feudalism to capitalism).

In this paper I side with the spirit of these critiques but focus on a different contrast between exchange and production. I contend that the former is basically an individual phenomenon while the latter is basically a collective phenomenon, in the group or team sense defined in footnote 4.

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between the two – the definition has a clear and definite economic meaning in the notion of team production, that is, in the notion of the non-separability and non-additivity of production functions (Alchian and Demsetz, 1972). An important class of production functions which are non-separable and non-additive comprises those that exhibit strategic complementarities. Note that the definition itself of strategic complementarity (a positive cross-partial derivative) provides an intuitive link with the sociological definition: the whole is not the sum of its parts because the latter *transform* themselves in the production process.

This is particularly important if one accepts an investment-driven view of the value creation process, for exchange is involved in only one case out of four: that where the creating-value investments are made singly both at inception and realization (as in craftsmanship and traditional agriculture, for example).<sup>5</sup> The binding nature of this autarchy option, and the consequent characterization of exchange as voluntary, when coupled with competition, gives rise to a highly idealized situation in which every individual is totally indifferent to the presence or the absence of all others, not sensing any effect from their actions (see footnote 18).

However, in the other three cases (when the investments are made collectively both at inception and realization; when the investments are made collectively but realized singly; or when the investments are made singly but realized collectively), the value creation process involves a collective component at least at some stage. Whence derive the three issues of how collective decisions on how the single parts should combine to produce the whole result are taken, how they are enforced, and how surplus value is distributed.

The categories of exchange between given individuals and individual choice, with individuals giving up authority according to comparative advantages and being paid for their individual contribution,<sup>6</sup> are not necessarily enough to handle these three issues, because they are ultimately based on the relation between an individual's contribution and what it can command elsewhere. But it is only when investments are made singly both at inception and realization that individual reward, the value of individual contribution, and what it can command elsewhere may coincide (if output markets are to remain competitive). In the other three cases of collective investments and team production, what individuals can command elsewhere is no longer connected with an individual's contribution (which is not directly measurable) but depends on the nature of inter-group relationships (the next best alternatives are in other groups). And, in turn, the latter may be seen as determined by the value creation process and as at least partly shaping the very individual characteristics which drive choice and exchange. For this reason, individual rewards comprise a socially determined component depending on mechanisms exogenous to every individual in the group but endogenous to group behavior (see also footnote 10 below).

Whilst the usual assumption of no wealth effects is approximately true in the case of firms' relationships, it creates additional problems in the present context. When invalid as it is in human relations in general and in the labour market in particular, power and distribution are intrinsically linked from the outset, individual-level and group-level value maximization processes do not push the system in the same direction, and the analysis of their interaction apparently becomes necessary because bargaining positions cannot be treated as exogenous and unimportant.

Even the recent approach of the economics of conflict (Hirshleifer, 1991, 1995; Skaperdas, 1992; Muthoo, 2004; see also Piccione and Rubinstein, 2005, and Acemoglu et al., 2005), although it correctly points to the reality of explicit coercion, involuntary exchange and the relation between power and distribution, does not seem entirely satisfying. As in much of the Marxian tradition, in fact, in this literature the issue of domination vs. cooperation, mainly with respect to the emergence of social order from a blank-slate state of nature, is solved in terms of exogenous asymmetries (or symmetries) of power between the parties involved. In turn, the latter are associated with individual characteristics such as initial endowments, comparative advantages in specialization, and time preferences. But, again, the main thrust of the paper is that these parameters

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<sup>5</sup> I call 'inception' and 'realization' the two stages necessarily implied by the definition of investment as the current employment of resources to increase future production. An investment-driven view of the value creation process is agnostic as to the philosophical question of why people (should) attach value to things or relationships. It merely takes account of the fact that if an increase in the value of production occurs, there must have been prior investments to obtain the result. The decomposition into the two stages of inception and realization, and the various ways in which individual and collective components can combine, seems particularly consistent with the current characterizations of the economy as a 'knowledge economy'. As for history, according to Mokyr (2002), not even the Industrial Revolution was simply the result of 'Smithian' growth. See sub-section 3.2.

<sup>6</sup> The case for shifting the margin of analysis from commodities to individuals, in light of the recent advances in the economics of asymmetric information and opportunism, is convincingly put forward by Makovski and Ostroy (2001).

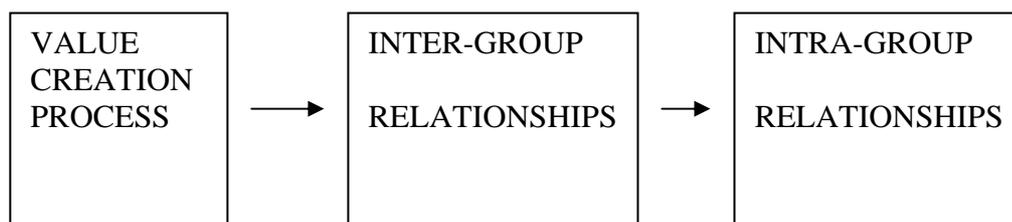
are better viewed not as exogenous but as emerging from more complex interactions between individual-level and group-level selection mechanisms. Sharing the same individualistic methodology of the new-institutional perspective outlined above, then, the same point about the collective nature of most human activity and its consequences on the relation between individual contribution and the next best alternative can be made about the basic analytical tool of the literature: the choice between producing and preying in terms of opportunity cost.<sup>7</sup>

Hence, as an illustration, suppose there are  $n$  individuals and  $m$  groups. It may help to conceive the within-group situation not in terms of the dyadic interactions typical of game theory but in terms of a would-be leader or dominant individual facing a group of would-be followers or subordinates (Veherencamp, 1983; see also Betzig, 1992).

Because of the collective nature of production, intra-group decisions are taken not independently but conjointly, that is, hierarchically or by consensus. The assumption is that whoever is empowered to decide how single parts combine to produce the whole result does so by maximizing his share of the surplus, taking account of the characteristics of the accompanying investments and of group members' outside options. The identity of the decision-maker is determined by the nature of inter-group relationships, which in turn are assumed to depend on group-level selection mechanisms also driven by the logic of value maximization, in this case group value maximization (fig. 1).

This last assumption is of course a crucial one rationalized by the fact that, when value-creation occurs in groups, inter-group relationships also represent the way in which groups form (by conflict or by fission-fusion). Variation among groups, at this stage, is selected more rapidly and more forcefully than individual variation. In the first place, therefore, those who survive may be legitimately seen as emerging from inter-group relationships which maximize group value.

In other words, the general situation that I want to represent with this assumption is not one of given individuals in a Hobbesian or Lockean state of nature who have to decide whether or not to associate; rather, it is one where malleable individuals confront a population of groups, being sometimes in a position to choose the group, sometimes not, sometimes with this choice making a difference, sometimes not.



**FIG.1**

Next, suppose that value arises from appropriating resources from other groups, which is a between-group competitive push as in much of the history of relationships among states including colonialism, or market-share competition in a stable industry. Group-level mechanisms driven by the logic of maximizing group value imply that inter-group relationships are conflictual or war-like.

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<sup>7</sup> The approach closest to that of the present paper is taken by Hirshleifer (1995), where the distribution of resources plays an important role in determining the corresponding type of social order. Non-defendable resources lead to 'scramble competition', defendable and dispersed resources lead to stable anarchy, while defendable but concentrated resources lead to despotism. The other drivers of the model are the 'technology of conflict' – which measures the extent to which resources devoted to fighting translate into probabilities of success – and initial endowments.

Groups form through conquest so that rigged belonging and the lack of outside options means that the identity of the parties is relevant both before and after the value-creating investments are made. The same investments, on the other hand, are made collectively both at inception and realization (as in the preparation and actual conduct of war, or in on-the-job training). As a consequence, intra-group relationships are hierarchical and centralized. The dominant individual or elite, more powerful or richer because of the successful previous conflict and unrestricted because of the subordinates' impossibility to change group, takes control of the operations and appropriates the surplus value. Recruitment and enforcement, on the other hand, are not spontaneous but instead need explicit coercion and separate monitoring systems, again because of the subordinates' impossibility to go elsewhere and their lack of 'positive' incentives (fig.2, upper-left box).

Consider now the case where value arises from niche competition, a between-group opportunity pull as in the case of the hunter-gatherer economies which dominated most of human history, or the discovery of new professional fields such as, say, class action (fig.2, box in the middle). Group-level selective pressures imply in this case that the most successful groups emerge from inter-group relationships which are fission-fusion with commitment, since groups last until the niche is exploited but need an initial collective move. This implies that the identity of the parties is not relevant before the investments are made (individuals can choose the group) but only afterwards, for investments are made collectively at inception but realized singly (as when hunters move into a particular area and the prey is caught by the most proficient hunter, or when the direction of knowledge development is set by the scientific and technical community but innovations are made by individual researchers). Accordingly, inter-group relationships are egalitarian (command of the initial investment process is in the hands of the group, which appropriates and redistributes the surplus) and decentralized (i.e., self-enforcing, because both membership decisions and the punishment of group norm deviations are undertaken by single individuals<sup>8</sup>). Note how inter-group relationships establish the identity of the decision-maker: groups form periodically on the basis of individual choice, and the naturally dominant individuals must restrain themselves because otherwise they would not be accepted in any group for fear that, on realizing the investments singly, they might appropriate the entire surplus (as exemplified by the non-compete clauses commonly used in partnerships, to anticipate one application from the next section).

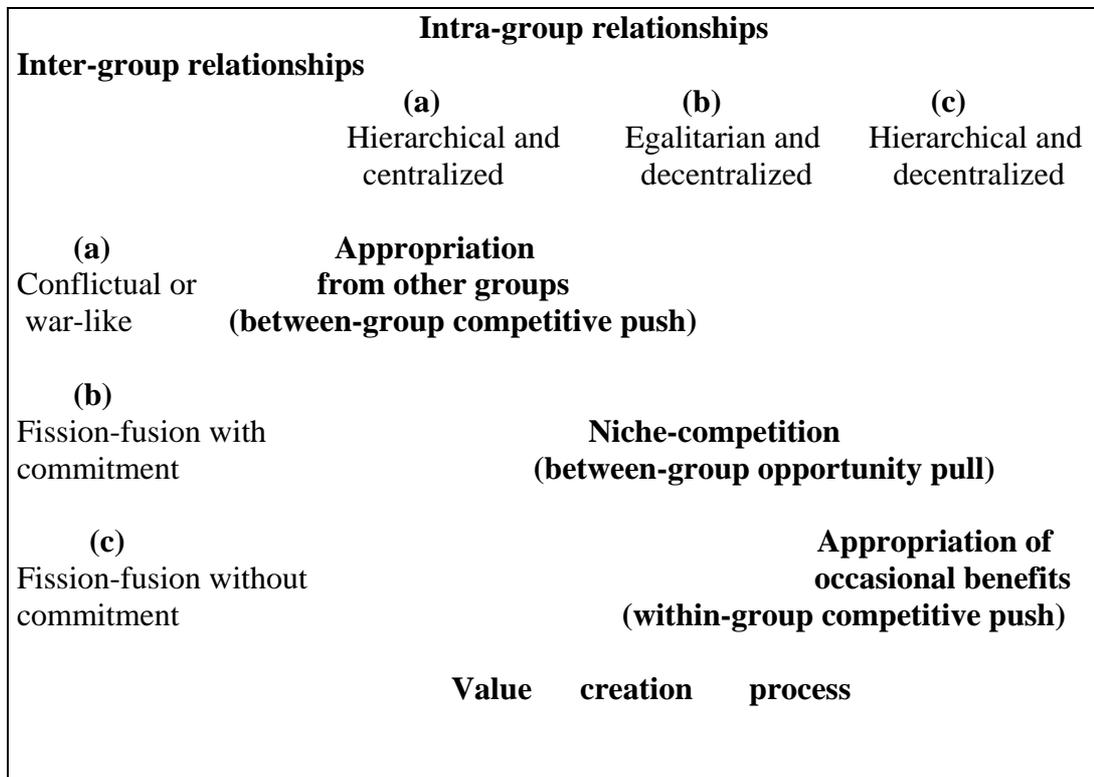
Finally, take the case where value arises from appropriating occasional benefits from cooperation, a within-group competitive push as in occasional defence against predation in anarcho-individualistic human and non-human societies, or arms-length labour-market relationships (fig.2, lower-right box). Since there is no point in having stable groups, group-level mechanisms maximize group value by determining fission-fusion inter-group relationships, so that they become indistinguishable from intra-group relationships. Investments are made singly at inception but need a collective realization (as when a new car, for instance, is designed in the developed world and actually produced in a developing country, or, more generally, when individuals acquire in their youth the basic educational levels increasingly required at all stages of the value chain). Hence each party needs another one to complete the investment but is indifferent to who the latter party actually is (the identities of the parties are irrelevant both before and after investments are made). Intra-group relationships are therefore hierarchical and decentralized. Previously successful surplus-takers are able to dominate the realization of the investments because of their relatively small number, while enforcement and recruitment are spontaneous because subordinates have no reason

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<sup>8</sup> Usually, individual punishment of group norm deviations is seen as a second-order public good problem and is therefore explained in terms of (group-selection evolved) non-selfish preferences. They are not necessary in the present context because individuals are motivated by fear of expropriation of the collective components of the investment. Capturing the effect of group-level explanatory mechanisms on beliefs, preferences and self-understanding is, however, one of the most important achievements one can hope for by focusing on them. See the next section and the conclusions.

to expect better terms elsewhere but cannot realize the investment singly. This is of course a case of involuntary exchange.<sup>9</sup>

Schematically, the above reasoning can be therefore represented as in fig. 2.



**FIG. 2**

The final comment concerns the notion of exploitation. In the present context, individual contribution and rewards are not directly measurable and valued as they are when investments are made singly both at inception and realization (an individual and conflict-free? within-group opportunity pull corresponding in effect to the institution-free framework of general competitive analysis).<sup>10</sup>

<sup>9</sup> I do not claim that the categories of exchange and choice are logically flawed for this kind of analysis, because the autarchy option is always available – by committing suicide to provide an already-mentioned dramatic example. The point of inserting intermediate entities between individuals and society is that the framework forces consideration of the alternatives available in other groups; an option (or a constraint) usually not discussed in state of nature approaches, where given individuals choose whether or not to associate from the outset?. In this sense, exchange may be involuntary if individuals are not autonomous in their decisions on production. Nor, of course, do I think that there are no natural differences among individuals (and so no gains to be realized by specialization according to comparative advantage), or claim that such differences are entirely determined socially as assumed in the text. The best way to see the three cases above is to think of how natural differences are modified by the operation of the group-level selective mechanism: respectively, they are amplified, reduced, and left intact.

<sup>10</sup> When individual contribution is not directly measurable, there is naturally Alchian and Demsetz's (neo-Hobbesian) solution of a monitor who specializes in metering individual productivity, reversing the market-based causal relationship from productivity to rewards. Note, however, that the supervisor promises to pay according to individual productivity, and that the corresponding motivation of the worker to make a greater effort because of the gains with respect to unmonitored teams may be invalidated by considering the nature of inter-group relationships and the characteristics of the value creation process. When inter-group relationships are conflictual or war-like, the workers have no alternatives, so the supervisor can break the promise, obtaining the desired amount of effort by explicit coercion and direct monitoring. When inter-group relationships are fission-fusion with commitment, the workers' alternative may be better than paying the supervisor because of the group sharing rules, so that the solution is disrupted by the supervised. Finally, when inter-group relationships are fission-fusion, or indistinguishable from intra-group

They are instead partly determined socially by the interaction between individual-level and group-level selection mechanisms. Exploitation, therefore, cannot be conceived as a lack of correspondence between the two, but must be taken as the non-sharing of the fruits of collective efforts. Consequently, institutions are not the anticipated solution to the problem of exploitation as in the hold-up inspired theories of the firm of Transaction Cost Economics (Williamson, 1985) or the Property Rights Approach (Hart, 1995); rather, they may be the very conditions for its occurrence, even without explicit coercion. The next section tests this conclusion and the preceding argument by means of concrete historical examples.

### **3. Applications**

Social order and the division of labour are two basic and time-honored subjects in both economics and sociology. They have been prominent examples of the individualistic and the structuralist methodologies mentioned in the Introduction, and they are the subject of the theoretical perspectives discussed in the previous section. It is for this reason that they have been chosen as preferred fields to apply the preceding argument. To restrict a discussion which otherwise would be too general, however, they will only be treated through a few examples of political and economic institutions cited as different ways to solve the problems that they pose.

A specific definition of the term ‘institution’ is now in order, and it seems to me that the most simple and appropriate one is that by North (1990), where institutions are defined as (formal and informal) rules and their enforcement mechanisms.<sup>11</sup> A further restriction is that such political and economic institutions are also distributive institutions, as follows from the fact that the value creation process is taken as the exogenous engine of the proposed evolutionary framework and that the assumption of no wealth effects is dropped.

Even with these qualifications, I am not able to cover all the related literature and am forced to deal with it rather selectively. Political institutions will be discussed in the following sub-section, while economic institutions will be treated in sub-section 3.2.

#### **3.1. Political institutions**

According to Taylor (1987), there are four characteristics which help to define social order: absence of actual violence, respect of life and property, conformity, and predictability.

The three kinds of political institutions which, in equilibrium, are understood as embodying the rules associated with a particular form of social order in the sense just delineated, and corresponding to the three types of intra-group relationships discussed in the preceding section, are the primitive States, the egalitarian communities, and the anarcho-individualistic human and non-human societies (fig.3). They have been chosen not only because human evolution passed through them in a rough (and reverse) temporal sequence, but also because, while exhausting the theoretical spectrum of the possible solutions to the problem of social order,<sup>12</sup> the link between the economic and the political realms is, in such cases, more evident and clear-cut than in our times.

As for the emergence of State organization, meant as the emergence of social stratification between a ruling elite and a ruled mass of subordinate individuals, with separate enforcement apparatuses such as the military, law administration and religion, anthropological research for the

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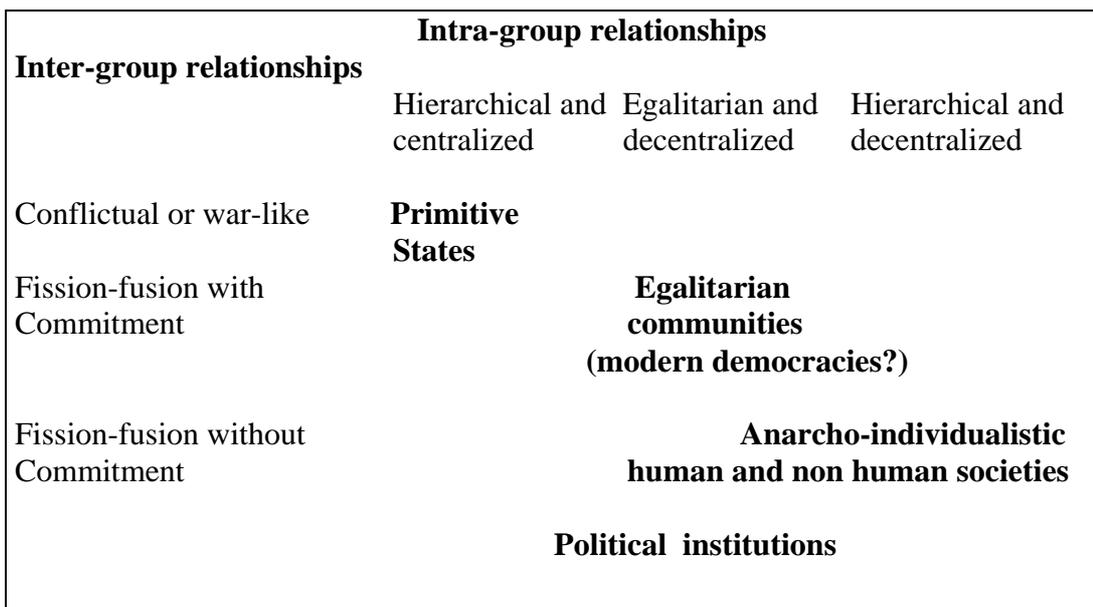
relationships, the supervisor can exploit his natural position on the short side of the market and obtain the desired effort by using the stick of the threat of dismissal rather than the carrot of an improved match between productivity and rewards. Also note that, because of the characteristics of the investments – made singly at inception but realized collectively – in this latter case there is no need for the enforcement rent typically resulting from efficiency wage models. See Bowles, 1985.

<sup>11</sup> North has subsequently abandoned his famous distinction between institutions as rules of the game and organizations as players. See Hodgson (2006).

<sup>12</sup> The fourth possibility, that of centralized and egalitarian rule, has predictably proven impossible since the end of the Communist era.

most part reflects the divide between the Hobbesian and the Marxian perspectives (respectively, Service, 1975, and Fried, 1967). In the former case, individuals accept the authority of the State to restrain their natural anti-social tendencies so as fully to enjoy the benefits of cooperative group living.<sup>13</sup> In the latter, State organization is the result of a within-group struggle for scarce resources among competing (sub)-groups.

Whilst the evidence may not be conclusive notwithstanding the abundance of examples and counter-examples (Cohen, 1978), a third, convincing, and well-established perspective is that of ‘circumscription theory’ (Carneiro, 1970; see also Allen, 1997). Here, State organization is the result of wars fought between different populations living in geographically or socially circumscribed areas such as those of Latin America and the Middle East. In other words, it is seen as the result of external conflicts. The impossibility for the conquered population to flee to other lands explains its subjugation to the victorious one, which gives rise to a situation which perfectly matches the above case of intra-group hierarchical and centralized relationships chosen by a value-maximizing decision-maker whose identity is determined by conflictual or war-like inter-group relationships. Sedentarism and agriculture, as necessary but not sufficient conditions for the theory, when coupled with the notion of circumscription, are of course a revealing case of a between-group competitive push value creation process consisting of the appropriation of land resources from other groups (fig.3, upper-left box).



**FIG. 3**

As for egalitarian communities (fig.3, box in the middle), the ones most studied are of course those of hunter-gatherers (Kelly, 1995; Boehm, 1999). If human history is represented on the scale of a single day, they gave way to agricultural sedentarists at ten minutes to midnight, and in fact continue to struggle for survival in some remote areas of the world?. Naturally, in this case, too, there is debate about the nature of their distinctive characteristics: the substantial absence of social

<sup>13</sup> This is also the state-of-nature framework of the models explaining the emergence of the State in the economics of conflict: starting from the basic trade-off between productive and predatory activities, the emergence of an ordered society results from a ‘contractarian’ approach in which the reduction of destructive violence (or improvements in the incentives to work due to a better protection of property rights against internal threats) is balanced against the potential despotism of the ‘king’ (or simply the dilution of incentives to work deriving from the duty to pay taxes). See Bates, Greif, and Singh, 2002, and Grossman, 2002.

stratification and leadership, extensive food sharing, effective and decentralized punishment of individual deviations from group norms, and generally peaceful inter-group relationships (Knauft, 1991). But, although approaches insisting on their basically kin-based composition do exist (Earle and Johnson, 1987), the mainstream tends to see them, and the theoretical problem of cooperation that they pose, in terms of the various meanings attached to the notion of reciprocity, currently a major subject in experimental economics as well.<sup>14</sup>

For the purpose of the present analysis it is sufficient to note that the features of such hunting economies are consistent with the previous argument that, when value arises from niche-competition among groups, inter-group relationships are fission-fusion with commitment (hunting groups periodically form to reach unexploited areas and remain together for the duration of the hunting season, which obviously may vary depending on environmental factors). Consequently, intra-group relationships are egalitarian (in the absence of social stratification, decisions on where to move are typically reached by consensus, while food sharing is extensive<sup>15</sup>) and decentralized (both membership decisions and enforcement of the group's rules are spontaneous, see footnote 8).

Interestingly, if dominance and submission are taken to be the most salient natural tendencies that we humans share with our closest primate relatives, and the hunter-gatherer communities are correspondingly seen as the domination of the group of would-be subordinates on the would-be dominant individual for fear of his appropriative attitudes (Boehm, 1999), an intriguing parallel can be drawn with modern democracies, where leaders are given power under a strict system of checks and balances and mandatory clauses to dislodge them from office.<sup>16</sup>

Finally, it is not coincidence that explains why it is difficult to find examples of human anarcho-individualistic societies (fig.3, lower-right box). The reality, in fact, is that we humans are by far the most social species in the animal kingdom (with the possible exception of eusocial insects).

Among solitary species, examples of fission-fusion bands composed of a dominant leader and a flexible group of subordinates abound, the closest to humans being the case of gorillas. The silverback, as the group leader is called, decides the timing and the direction of the group's movements, and his dominant position translates into the domain of distribution, as reflected by the silverback's exclusive access to his harem of fellow females. The latter are the only permanent members of the group, while other males – usually younger and/or weaker – occasionally band together? to reap the benefits from enhanced defence against predation, and then leave with the hope of creating their own group or, if unsuccessful, of joining other groups under the same conditions (Watts, 1996).

As for humans, a way out of the problem would be to refer to pre-anatomically modern humans: that is, to the stage preceding the Paleolithic period. Because nothing is known about human social groups before the hunter-gatherer era, the standard method is that of 'triangulating' to human nature by attributing to the Common Ancestor the characteristics possessed by all its descendants: we humans and our closest non-human primate relatives – gorillas, chimpanzees and bonobos (Wrangham, 1987; see also Knauft, 1991).<sup>17</sup> On the one hand, hierarchy (as a way to take

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<sup>14</sup> See Trivers (1971) for reciprocal altruism, Alexander (1987) for indirect reciprocity, and Gintis (2000) for strong reciprocity. See also Boyd, Bowles, Fehr and Gintis, 2005, for a more comprehensive treatment of the debate and its impact on economics.

<sup>15</sup> This is not to say that the most proficient hunters are not rewarded in related domains such as reproductive success (Kaplan and Hill, 1985). Nor does it imply a universal, perhaps perfectly egalitarian, rule. In fact, each group seems to have its own habits (Henrich et al., 2001). The point is the social nature of the determination of the particular sharing rule and the particular meaning attached to the notion of individual contribution.

<sup>16</sup> But of course modern democracies can also be seen as an exchange between individuals with a preference for public life and individuals with a preference for private life.

<sup>17</sup> The method receives widespread agreement because it is conservative: were the traits attributed to the Common Ancestor not possessed by all its descendants, they would have had to appear two times independently. Gorillas are a species which diverged first (8 m years ago), then came chimpanzees (5 m years ago), with bonobos diverging from them about 2m years ago. The percentages of the DNA structure that we share with those non-human primate species are in an astonishing range between 90% and more than 98%.

decisions and distribute the surplus) and decentralization (as a spontaneous way to determine membership and to enforce group rules) are known to all such species. On the other, the superior group cohesion of chimpanzees, bonobos, and of course humans may be attributed to later, food-related adaptations moving away from the (within-group competitive push) value creation process associated with individuals gathering vegetables during the day and grouping at night to avoid predation. Hence, much of what has been said about gorillas can be repeated for pre-anatomically-modern humans.

Theoretically, though, the political arrangement under discussion corresponds to stable anarchy, when ‘anarchy’ is given the meaning of the absence of power outside single individuals.<sup>18</sup> Note that this is the case of neither primitive States, which were hereditary, nor hunter-gatherer communities, where authority was exercised by the group. Obviously, this is also a degenerate case of social order, where the fulfillment of the last of Taylor’s conditions – predictability – may be lost. A usual example of this situation is provided by international relations (with nations intended as single individuals).

### 3.2. Economic Institutions

Though the division of labour was a central theme in the work of the founding fathers of both economics and sociology, surprisingly little progress has been made since then (Ghiselin, 1978).

Smith (1976, ch.1), with his legendary example of the pin factory, and the theorem that the division of labour is limited by the extent of the market, seems to imply that there are no other limits to the increase in production achievable with ever more minute specialization and the associated gains from trade expansion. But Smith contradicts himself because he does not seem to realize that, precisely in the pin factory, the division of labour is not coordinated by the market. A better example in this regard would be that of the hunters and shepherds exchanging bows and arrows for venison in the subsequent chapter (see Pagano, 1985, ch.1). As often with Smith, however, the complexity of the full argument also allows for other interpretations. Specialization, gains from trade, and impersonal exchange are not the only sources of growth in his book, but are mixed with a ‘classical’ labour theory of value. A contradiction between annihilating the workers’ tasks and their capacity for learning by doing and innovating within the firm, therefore, can also be recognized in later parts of his book (Smith, 1976, fifth book; Pagano, 1985, ch.2).

Smith’s followers who revert to the invisible hand framework in any case, certainly refer to situations where investments are made singly both at inception and realization when they state that the three classical benefits from specialization are fully available only to the extent that the single task can be expelled from the productive process and stay independently on market (Stigler, 1951).

Durkheim (1893), on the other hand, with his idea that the division of labour fulfills the purpose of guaranteeing a given ‘*solidarité sociale*’, illuminates the role of the group-level determinants of the phenomenon, to the point of anticipating the notion that norms perform the role of covering the holes of contractual incompleteness (Durkheim, 1893, ch.7). But he does not seem to grasp the conflictual and distributional aspects of the problem (Braverman, 1974).<sup>19</sup>

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<sup>18</sup> By ‘stable anarchy’ I mean a situation where individuals refrain from attacking other individuals (Hirshleifer, 1995). In other approaches, instead, the complete realization of individual autonomy requires the existence of communitarian rules (see Taylor, 1987, in general, and Gardner, 1991, for hunter-gatherer communities). Naturally, its literal meaning of the absence of power is ideally and beautifully incorporated into general competitive equilibrium analysis.

<sup>19</sup> Obviously, in my view, the profoundest contribution of the time was made by Marx. According to him, the division of labour is the other half of production relations (here intra-group relationships), in turn dependent on the productive forces (here the value creation process). His labour theory of value and his identification of production relations with property relations alone, however, forced a failed preconization of an ever more extensive extraction of surplus labour from workers, and prevented appreciation of the ubiquity of the problem of cooperation in production and of the various forms that unequal exchange can take.

Exploiting a few stylized facts, therefore, I will distinguish economic institutions according to whether the rules of the division of labour embodied in a given team production process are vertical or horizontal (corresponding to the case of intra-group hierarchical or egalitarian relationships), and according to whether or not enforcement is spontaneous (corresponding to the case of intra-group relationships, decentralized or otherwise). As before, the latter distinction is understood both in the sense of the existence of a separate monitoring system and in the sense of how recruitment occurs, the former with a focus on distributional consequences, in addition to the organizational element (fig. 4).

Accordingly, the box to the upper left pertains to the classical firm. With respect to inter-group relationships, the characterization as conflictual or war-like follows from the absence of trade in ownership shares, and, mostly, from the absence of outside options (until two generations ago, Pirelli, an important Italian manufacturer, provided housing for its workforce, and lifelong employment was almost universal until the last generation). On the other hand, the early obsession with increasing the volume of production, without much concern to increase the size of the market by operating on the demand side, confirms that inter-group relationships can be interpreted as resulting from a value creation process consisting of appropriating resources (market shares) from other groups. As for intra-group relationships, there is little doubt that Taylorism before cold-war Keynesism was hierarchical in both the distributional and the organizational senses, and that it necessitated a separate monitoring apparatus (Braverman, 1974). In regard to recruitment, the point is so important and so mixed with the assumed value creation process and the subtle dogma of individual choice that it warrants a lengthy quotation from Mokyr (2002, p.128, emphasis added): ‘For the economist, it 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 offsprings) to abandon their cottages and seek work in the mills or to emigrate.’

The box in the middle can be allocated instead to partnerships, with their typical up-or-out promotion rules, non-compete clauses, flat hierarchies and profit-sharing schemes (Rayan and Zingales, 1998; Levin and Tadelis, 2005). The relative mobility of professional workers and the dynamic nature of working at the frontier of scientific and technical knowledge seem to apply to the case of inter-group fission-fusion relationships with commitment (up-or-out promotion rules, non-compete clauses). In turn, the latter can be seen as implied by a between-group opportunity pull value creation process fuelled by investments made collectively at inception but realized singly.<sup>20</sup> Flat hierarchies and profit-sharing are obvious examples of egalitarianism as defined above (see footnote 15), while the contemporary notion of ‘occupation community’ (Tolbert, 1996; Marsden, 2004) suggests that the decentralized punishment of individual violators of community norms may be quite effective (no doubt the recruitment of professionals stems from individual choices).

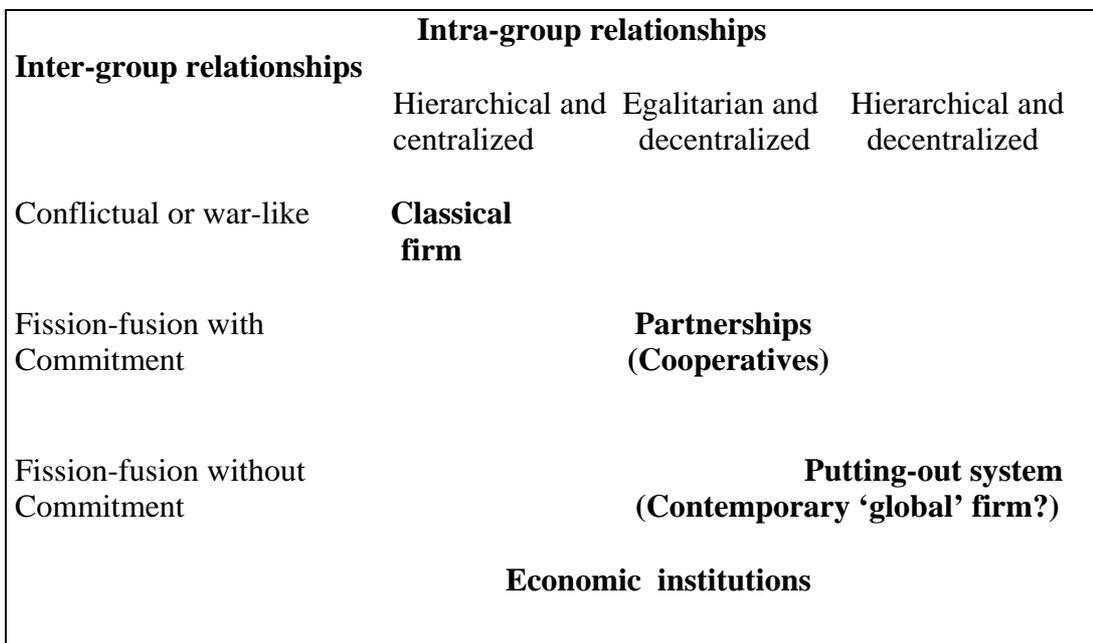
Finally, the box to the lower right is occupied by the ‘putting-out system’. The absence of stable orders and the interlocking nature of the relations between the ‘putter-outers’ and independent workers is a proxy for inter-group relationships indistinguishable from intra-group

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<sup>20</sup> 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).

relationships. Their hierarchical and decentralized character, on the other hand, can be appreciated in light of the following quotation from Marglin (1974, p. 81), which also offers an example of investments made singly at inception but realized collectively: ‘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’. His well-known view of the putter-outer’s profits as due to interposing a new figure between the producer and the market, therefore, is simultaneously an illustration of the within-group competitive push value creation process which drives the analysis in this case, and a reminder of the preceding situation, one of the few examples of investments – those of apprentices taking the place of the masters – made singly both at inception and realization.

Closer to our times, moreover, there is the contemporary ‘global’ firm viewed as an instance of intra-group relationships between unskilled workers and management.<sup>21</sup> The extensive development of capital markets and trade in shares, the progressive erosion of geographical limits to delocalization, and the fact that long-term contracts are not on offer to unskilled workers, fit the description of fission-fusion inter-group relationships generated by a value creation process consisting of appropriating occasional benefits from cooperation. The division of labour remains decidedly vertical and the earnings gap between capital and labour is widening enormously, so that intra-group relationships are hierarchical in both the organizational and the distributional senses. As to their self-enforcing nature, as previously noted, the increasing need for at least a minimal degree of education of the workforce in order to keep pace with technological progress may be taken as an example of investments which are made singly but need a collective realization. From this follows the progressive substitution of enforcement systems based on direct monitoring with those based on the threat of dismissal, and the involuntary nature of the implied exchange.



**FIG.4.**

<sup>21</sup> Professional workers within such firms, i.e. managers, are rather perplexing in the framework proposed. The rules governing the division of labour in this case appear indeed hierarchical in the organizational sense and egalitarian in the distributional sense. This may be due to their dual nature as agents for owners and principals of workers. Tellingly, in a world of perfect separation between ownership and control, they could have been placed in the same category as partnerships.

To conclude this section on real examples of the framework proposed, the last point to be made concerns the problem of institutional change. Whilst in the case of the political institutions discussed exogenous changes in the value creation process (from gathering to hunting to agriculture) are enough to explain the observed trajectory of changes in the institutional structure, matters become more complicated as far as the economic institutions of this sub-section are concerned. On the one hand, the industrial revolution and information technology are both such big pushes that the change from the putting-out system to the classical firm, and that from Keynesian Taylorism to the contemporary 'global' firm, could be easily accommodated. But on the other hand, more complex determinants such as ideologically and culturally driven institutional changes (such as the unions and the stock exchange, for example) have played a comparable role in the period. Moreover, as Marglin's analysis suggests, there is the unresolved Marxian issue of whether technology is always the exogenous driver of the institutional structure, or whether it is also a result of given institutional arrangements (Pagano and Rowthorn, 1994).

Given the general point that knowledge is not only technological but also social, such problems actually indicate the main theoretical deficiency of the framework proposed: the effect of structures on beliefs, preferences and self-understanding so as to allow for endogenous cultural and ideological institutional change. In terms of fig. 1, to put it another way, this would amount to analyzing the reverse causation mechanisms from given intra-group relationships to the value creation process passing through inter-group relationships. The complexity of the problem suggests that it should be left as a possible direction for future research.

#### 4. Conclusions

One risks not controversy but banality when emphasizing the role of groups in social life in general and in the value-creation process in particular. What may be more interesting is that belonging to a particular group *changes* one's perception of opportunities and constraints (as when one can be the star of a mediocre team or a mediocre player of a top team), and that for the most part the groups to which one could belong will continue their existence in their actual form *independently* of one's choices (universities have their own intellectual traditions, for example). It is also true, of course, that groups owe their existence to *some* individual, but in the normal course of events individuals do not choose the way in which groups interact: sometimes they can choose the group, sometimes not, sometimes this choice makes a difference, sometimes it does not.

To describe this kind of situation, in this paper I have analysed the interaction between individuals and groups, seeking to avoid both the so-called 'under-socialized' actor of economics and the 'over-socialized' actor of sociology. Borrowing insights from biology, I have framed institutional evolution in terms of an investment-driven value creation process occurring both within and between groups, put aside the neo-classical case of a within-group individual opportunity pull because of the implied absence of value-creating institutions, and concentrated on the other three cases of collective investments and team production. I have then investigated what kind of intra-group institutional structure obtains given the nature of the inter-group interaction among structures. The latter are assumed to be dependent on group value-maximizing selective pressures and, in turn, to determine the identity of the intra-group decision-makers, who then choose the former, maximizing their share of the surplus value taking account of the characteristics of the accompanying investment process and of group members' outside options.

The two main results of this inquiry are: (i) the parameters driving the results in the formal models of the emergence of social order from given individuals in the state of nature can also be seen as the results of more complex interactions involving a social component exogenous to every individual in the group but endogenous to group behavior; in particular, the special configurations ensuring 'balanced' forms of social order are not fortunate coincidences but require the relentless operation of group-level sharing rules; (ii) when value-creation occurs in groups, individual contributions to surplus value and individual rewards have a socially determined component, so that

exploitation can be defined, not as a lack of correspondence between the two, but as the non-sharing of the fruits of collective efforts; institutions can therefore be the cause of actual exploitation rather than the solution to its anticipated possible existence.

Naturally, this is only the first and easiest step towards integrating individual-level and group-level explanatory mechanisms, for it is simply the addition of a further constraint – the nature of inter-group relationships – on value-maximizing individuals affected by wealth effects. It seems to me that two fields in which an improved understanding of the subject may prove rewarding are the theory of distribution and decision theory.

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