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The Political Economy of Violence and Distribution in Ancient Times: A Note on the Relationship between Specific Investments and the Evolution of Early Human Societies

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Abstract: this paper combines the economic concept of specific investment with anthropological evidence on three early human societies –the disbanding groups of pre-anatomically modern humans, the hunter-gatherers' egalitarian communities, and the primitive states or chiefdoms. This combination is aimed to provide a single framework for thinking of the institutional evolution of their political organizations and, therefore, of the associated mode of regulation of violence and distribution. Specifically, I examine a circular causation mechanism by which exogenous 'technological' conditions determine the basic type of economic activity together with the associated degree of investments' specificity. The resulting safeguards are expressed in political terms and, in turn, the way these political organizations regulate the level of violence in the society implements a distribution of goods and power which has the effect of reinforcing the initial kick in terms of the economic structure. Thus, at the cost of some loss in formal sophistication, the paper stresses the two-way link between the economical, the political and the distributional sphere, and discusses group-level mechanisms to restrain behaviour that –exogenous to every individual in the group but endogenous to groups' behaviour- are not caught by conventional modelling about the origins of order.

Key-words: micro-foundations of groups; macro-foundations of individuals; self-reinforcing mechanisms.

JEL: D30; H11; K10; L22; N40.

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1. Introduction

Since the seminal contributions by Williamson (1975, 1985) and Klein et al. (1978), the concept of specific investment played a major role in the transaction cost approach to the theory of the firm, one of the first coherent and operational attempts to find a functional explanation for the existence of explicit hierarchies in the economic realm. By definition, when an investment is specific to a particular relationship, it is attributed with a quasi-rent, that is, an extra value over the next best alternative use. Since contracts are necessarily incomplete, however, such quasi-rent can be taken away from the original investor because of the so-called 'hold-up' problem. This is why the central proposition of the approach is that, while generic relationships can be optimally regulated by the market, specific relationships must be regulated by authoritarian relationships such as those prevailing in the firm in order to ensure the appropriate safeguards against the risk of expropriation.

Extending this framework to multilateral relationships, in Battistini (2001, 2004) I developed a notion of 'group-specificity' by which an investment is group-specific when it is specific to a (finite) set of relationships, but generic within the same set[1]. Accordingly, the most convenient organizational form for this kind of investment was individuated in the group relationships typically associated with the clusters of firms in industrial districts. Indeed, the basic empirical 'fact' that

[1] This is just but one notion of 'intermediate' specificity. Others have been introduced by Williamson (1991) and Menard (1996) to explain hybrid governance structures between the market and the vertically integrated firm. See also the analysis of the German 'unionized capitalism' in Pagano, 1991.

motivated the analysis was the combination between market and non-market relationships summarized by Piore and Sabel with the notion of 'flexible specialization': '[Under flexible specialization] No firm or individual has a right to any particular place within the community, but all have a claim to some place within in'. (Piore and Sabel, 1984, p.269).

Because of the Coasean separation between distribution and efficiency, this theory has proven more successful in explaining relationships between firms rather than employer-employees relationships (Joskow, 1985)[2]. As emphasized by radical economics (Marglin, 1974; Stone, 1974), when wealth effects cannot be assumed away, the other direction of causality –that from property rights to technology- may be at work and a conflict-based explanation in which (specific) investments flow from contractual safeguards obtains. More realistically, then, it has been possible to make clear how the self-reinforcing nature of the relationships between these two directions of causality implies 'organizational equilibria' attributed with stability but not with efficiency properties (Pagano and Rowthorn, 1994; see also Belloc and Pagano, 2005)[3].

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2 In a multilateral setting, in any case, claims to overall efficiency in reaping the benefits of the investments are also undermined by a necessary but uncommon 'non replicability' condition. See Battistini, 2001, 2004

3 Interestingly, under the label of 'productive forces' and 'production relationships' these directions of causality were both present in Marx and, in fact, by substituting 'technology' with 'stratification' and 'property rights' with 'central government', a similar 'chicken-and-egg' controversy between conflict-based and functionalist theories is also present in the anthropological literature about the origin of the State (see Fried, 1978, and Service, 1975). As will clearer in Section 2, even in this case a systemic approach which does not restrict itself to mono-causal explanations seems more apt to convey the idea of the complexity of the phenomenon (see, for example, Coehn, 1978a,b).

While Transaction Cost Economics and the subsequent Property Rights Approach[4] did employ the concept of specificity to give account of different ownership patterns including political and social organizations such as the State and NGOs (Hart, Shleifer, and Visnhy, 1997; Williamson, 2000; Besley and Gathak, 2001), adopting the more general perspective just mentioned, in this paper I try to relate it to three archaic political forms and, specifically, to the way they represented a solution to the problem of controlling violence and implementing the associated mode of distribution of goods and power in the society. These three early human societies are the disbanding groups of pre-Anatomically Modern Humans, the hunter-gatherers' egalitarian communities, and the ancient states or chiefdoms. They have been chosen not only because human evolution passed through them in a rough temporal sequence, with elements of the former passing to the next, but also because -it goes without saying- they are so different from market societies in having a substantial part of economic behavior heavily embedded in socio-political relations.

The line of reasoning is as follows: before the emergence of symbolic culture (i.e., the conceptualization and the transmission of information beyond the here-and-now (Whallon, 1989)), economic investments and talents of the people cannot be but generic with respect to both other people and the land they lived on. Having the exit option available at no cost, individuals were not interested in requiring special safeguards and probably lived in disorganic agglomerations comparable to those of

[4] See Hart (1995).

the contemporary great African apes who share with us a common ancestor[5] . What we call now an Hobbesian state of nature with its characteristic 'violence of all against all' probably prevailed, while innate physical differences among individuals, together with the strict operation of fission-fusion mechanisms, possibly determined the distribution of goods and power in the 'society'.

By contrast, when people became able to communicate effectively and to take collective decision such as, for example, where to migrate to hunt what, economic investments and talents were specific to the group in the sense above. Hunting a particular animal in a particular place, in addition, is both an activity associated with intrinsic difficulties in attributing individual merit and a positional activity in the sense that what one catches decreases directly what the others can catch. Consequently, it is reasonable that people demanded appropriate safeguards in the form of the egalitarian distribution (sharing of large game meat) and politics (curbing of tendencies to upstartism and free-riding) typically attributed with hunter-gatherers communities, as well as a mode of regulation of violence in the form of collective moralistic aggression against deviants (Boehm, 1999)[6].

Finally, well after people became sedentary practicing agriculture and domestication of animals, and individual property rights proliferated so that mobility was no more a

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[5] The method of triangulating to the human nature by attributing to the common ancestor (CA) the characteristics possessed by all its descendants (the existing African great apes such as gorillas, chimpanzee and bonobos, and the better known human societies of the past), has been introduced by Wrangham (1987), and is reported in the next section. Interesting comparative analysis of human and non-human primates' economies have recently hosted by the *Journal of Bioeconomics*. See (Pryor, 2003, and Boehm, 2004).

6 The use of the term 'moralistic aggression' may be confusing because in his original article Trivers (1971) does not admit neither individual net detriment nor group advantage. The adjective 'collective', instead, makes an inevitable reference to the problem of free-riding. See the next footnote.

viable option, economic investments and resources became sufficiently differentiated and bilaterally specific to particular pieces of land to require a sort of 'coerced exchange' between legitimacy and the formal protection provided by primitive states in the form of 'organized violence' (written codes; military, judiciary and religious apparatuses). In addition to allowing for economic specialization, storable surplus from agriculture, in effect, meant that the particular type of distribution chosen among the many possible (usually, subsistence for peasants and residual claiming for the ruling elite) had to be enforced by formal coercion (Gellner, 1989).

Thus, the argument is not only economic in the usual sense of applying the methodology of individual choices under constraints, but also in the more classical sense of uncovering the two-way link between the economical, the political and the distributional sphere. The only assumption which is eventually contested is that of unconstrained self-interest, for the choice to make group-specific investments is undermined by the free-riding attitude economists and socio-biologists are both keen to stress[7]. As group-specificity decrease variation within the group and increases variation between groups, however, such 'self-defeating' choices and the ensuing

7 This is of course another delicate issue. In general, biologists are inclined to think that every behavior –even those seemingly altruistic- can be parsimoniously explained by an appropriate definition of self-interest -the best example being the notion of self-deception for the theory of indirect reciprocity (Alexander, 1987), when kin selection (Hamilton, 1963) or reciprocal altruism (Trivers, 1971) are not enough. Perhaps with minor psychological sophistication, the same is true of economists' game-theoretic analysis of trust and cooperation (but see Kreps, 1990). However, another group of theorists tend to admit the co-existence of purely selfish with other-directed motives and behaviors, as well as the view of selection as a multilevel process (see, for instance, the collected essays in Hammerstein, 2002). Interpreting –as I partly do- group-specificity-based institutional mechanisms as cognitive constraints in the process of self-understanding may blur the line between the two schools but it is only a way to avoid the other big scientific divide in social sciences, between structuralism and individualism (see Hodgson, 1998; Fehr and Gintis, 2004; Greif, 2005). Another interpretation is that self-sacrifice in hunter-gatherers' societies may be the very price to be paid in order to gain complete

enforcing mechanisms can be seen as evolved under the conditions favouring group-selection over individual-selection (Wilson and Sober, 1994; Sober and Wilson, 1998; Bowles et al. 2003).

The rest of the paper is organized as follows. In the next section I present the relevant anthropological and historical evidence about the above three stages of the human evolution. Section 3 contains a very simple characterization of the proposed circular relationship between specificity, political organizations, and regulation of violence and distribution. Section 4 briefly concludes.

2. Anthropological theories and evidence.

Usually, formal modelling about the origins of order skips the Paleolithic stage and tackles directly the step from a blank slate state of nature to an organized society[8]. To be sure, the explicit analysis of the 'dark-side' of economics (a result in its own) permits this literature to produce a number of novel and interesting results with respect to both neoclassical orthodoxy and the incomplete contracts approach. Included are the relationship between power and distribution (Hirshleifer, 1991; 1995), the possibility that institutions emerge from exploitation rather than Pareto-

individual autonomy (Gardner, 1991). A full treatment of the issue, however, is outside the scope of the paper, as is an accurate definition of anarchy as a social arrangement.

[8] The literature is known as the economics of conflict (Hirshleifer, 2001). Starting from the basic trade-off between productive and predatory activities, the emergence of an ordered society results from (exogenous) domination of one party over the other, or from a 'contractarian' approach in which the positive incentives deriving from certainty of property rights (or the reduction of destructive violence) are balanced against the potential despotism of the 'king' (or simply the dilution of incentives to work deriving from the duty to pay taxes). The key parameters which regulate such trade-offs are the technology of conflict (Hisrchleifer, 1991, 1995; Grossman, 2002), differences in productive and/or fighting abilities (Muthoo, 2004; Skaperdas, 1992), the interest rate (Bates, Greif, and Singh, 2002; Muthoo, 2004), and the characteristics of the distribution of the resources (Hirschleifer, 1991, 1995; Baker, 2003).

efficient exchanges (Skaperdas, 1992; Moselle and Pollack, 2001), and the state as a solution to the collective action problem of providing defense against predation (Grossman, 2002), or as a regulator of the trade-off between peace and prosperity (Bates, Greif, and Singh, 2002). In addition to reproducing as unbridgeable the divide between conflict-based and integrative theories, however, because of the methodological commitment to self-interested maximization and diminishing returns, the same literature has problems in dealing with group behaviour[9]. More generally, such a methodological commitment does not allow the treatment of cultural or cognitive mechanisms to manage power, meaning institutional constraints on behaviour different from both strict competition and plain coercion. For this reason the jump above seems a big jump not only historically for it hides about 90.000 to 30.000 years -a period of time well sufficient to create a new species[10]-, but also logically because it hides the stage where such mechanisms originated and passed to the subsequent ones -think, for example, of the theories of inter-group warfare as determinant of emergence of the state (Carneiro, 1970) and of human sociality (Alexander, 1987)[11].

9Recent attempts to analyse coalition formation deliver contrasting results. According to Garfinkel (2004) the free-rider problem in the collective action setting of group formation reduces the intensity of conflict and, thus, has beneficial effects on the stability of alliances, for it offsets the traditional depressive effect of lessened appropriability. Esteban and Sacòvics (2002), however, show that the result is not robust with respect to the analysis of individual differences, particularly when represented by parameters like the vicinity of interests and/or differential strength.

10 According to E.O. Wilson (1978, p. 91) substantial changes can occur in the span of less than 100 generations, while two thousand generations are enough create a new species and to mold organisms' anatomy and behaviour in major ways. As a human generation is a relatively lengthy twenty-five years, the neglected period covers about one to three thousand generations. See also Boehm, 1999, ch. 9.

11 The affinity with socio-economic concepts like rationality as the capacity to recognize socially shared meanings (Durkeim, 1950), docility (Simon, 1990), or internalization of norms (Gintis, 2003) suggests they are relevant for modern societies, too.

As mentioned in the Introduction, this stage is that of egalitarian hunter-gatherers communities and, needless to say, it has been at the centre of anthropological research for entire decades. Basically, such communities are described as small size, mobile and relatively flexibly composed groups, deeply cooperating in hunting and regularly sharing large game meat, with well specified informal political mechanisms to curb innate tendencies to self-assertion and free-riding (Boehm, 1999; Knauft, 1991). For the sake of clarity, explanations of their egalitarian character can be classified as ecological, economical and political. To the first group belong theories emphasizing the importance of small numbers and mobility (Turnbull, 1965), especially in relation to the seasonal and scattered character of the distribution of resources (Salzman, 1979). Economic explanations obviously focus on the characteristics of hunting, stressing the non storability condition and therefore the actuarial convenience of sharing (Fried, 1967) and, at least as interestingly for what follows, the lack of specialization in economic production (Gluckman, 1965). Arguing that ecological and economical factors are certainly important but too specific to give account of a phenomenon observed worldwide in different periods including the present, political explanations underline the concept of intentionality and make reference to an 'egalitarian syndrome or ideology' which would relate innate tendencies to dominance and submission to an equally powerful resentment to be dominated, resulting in the so-called 'reverse dominance hierarchies' (Boehm, 1993). As a consequence, in this approach the viability of the egalitarian characteristics –sharing of large game meat, consensual decision making and the substantial absence of leadership and social stratification- is explicitly connected to

the existence of morally motivated and collectively enforced levelling mechanisms which, depending on the circumstances, pre-empt or punish deviant behaviours (ridicule, public opinion, ostracism, execution)[12].

Notably, though theories underlining kin selection (Earle and Johnson, 1987) or individualistic motives to share (Blurton-Jones, 1984) do exist, an analysis of the pre-adaptations that have made possible this stage of the human evolution (lethal weapons, communication capacity, a disposition to think morally) seems able to discard them. Such pre-adaptations, in fact, for the most part are also the foundations of the emergence of symbolic culture and, therefore, of the uniqueness of humans in being submitted to the pressure of cultural and group selection, in addition to the universal operation of natural and individual selection (Boyd and Richerson, 1985, 1990; Enrich, 2004)[13].

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12 The cognitive elements of such mechanisms can be appreciated with the following quotation from Lee (1979, pp. 244-246, reported in Boehm, 1999, p. 45) about the culture of the !Kung: 'Say that a man has been hunting. He must not come home and announce like a braggart, "I have killed a big one in the bush!". He must first sit down in silence until I or someone else comes up to his fire and asks, "What did you see today?" He replies quietly, "Ah, I'm no good for hunting. I saw nothing at all..maybe just a tiny one." Then I smile to myself because I now know he has killed something big.'. Another group member, in fact, is keen to add (ibidem): 'When a young man kills much meat, he comes to think of himself as a chief or a big man, and he thinks of the rest of us as his servants or inferiors. We can't accept this. We refuse one who boasts, for someday his pride will make him to kill somebody. So we always speak of his meat as worthless. In this way we cool his heart and make him gentle.'. The quotation also illuminate that, though obviously originating from individuals, such cognitive constraints on self-understanding are at the same time exogenous to every individual in the group, and can be seen as emerging from the interaction between the micro-foundations of groups and the macro-foundations of individuals, with tradition as the obvious candidate to fill the temporal gap. Other, more theoretically inclined explanations of cooperation in similar settings have been advanced in terms of costly signaling (Gintis et al., 2001), low cost of punishment (Boyd et al., 2003), and a predisposition to incur the cost of punishment without expectation of reward (Gintis et al., 2003). For a Machiavelli-inspired interpretation of the point, instead, see Erdal and Whiten (1994).

13 Whallon (1989) has an interesting point in this respect. It wasn't technological innovation but symbolic culture and its expression in language that permitted the expansion of hunter-gatherers of the late Paleolithic in difficult regions such as the Siberia and Australia. To move there, in fact, it was indispensable to possess and circulate reliable and accurate information about the availability of mates and material resources.

If this perspective is accepted, then the next step is to look for the characteristics of the stage which preceded the appearance of symbolic culture. Here, lacking uncontroversial ethnographic and archaeological evidence, the most agreed method is that of triangulating to the human nature by attributing to the common ancestor (CA) the traits possessed by all its descendants, the existing great African apes who share with us a substantial part of the DNA structure[14], and the better known human societies of the past (Wrangham, 1987). The method is conservative because otherwise these commonly possessed traits would have had to appear two times independently, and it generally challenges the linear evolutionary trajectory postulated by socio-biologists with respect to despotism and inequality, outlining instead the possibility of a U-shaped form for the evolution from the CA to the first sedentary human agglomerations (Knauft, 1991). In any case, since hunter-gatherers societies have been treated above and primitive States or chiefdoms will be treated below, now it remains to report what primatologists mostly agree to attribute to the social life of gorillas (*gorilla gorilla*), chimpanzees (*pan troglodytes*), and bonobos (*pan paniscus*), that is, to describe the economics (food procurement and distribution) and politics (dominance relationships) of their group living[15].

As is well known, the gorillas are the species which diverged first from the CA (8 millions years ago). Its social group is composed of a silverback and its harem

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14 The -astonishing - percentages range from about 90% to more than 98%.

15 The other relevant dimension of their social life is of course sexuality. See Battistini and Pagano (2004) for an analysis of how the differences in the incentive properties of our mating systems in comparison with those of our closest relatives, together with the complentarities between natural and sexual selection, may have lead to the development of uniquely human faculties including language and (emotional and rational) intelligence. While in that paper females' selective sexual receptivity was

of females and, less infrequently of what is commonly thought, of some subordinate (often younger) males (Harcourt, 1979; Fossey, 1983). Their diet exclusively consists of foliage and food sharing is virtually unknown, even in mother-son relationships (Fossey, 1979; Jolly, 1985). By the same token, coalitional behaviour is basically absent and encounters between males have an invariantly violent character which does not permit of distinguishing between intra- and inter-group relationships. Politically, social life is therefore dominated by the silverback, who leads the group in the timing and direction of its movements and aggressively defends it against strange males (Watts, 1996).

Things are different as far the chimpanzees are concerned. They are the best studied species, and live in mixed sex groups with a clear and definite dominance hierarchy from the α-male to middle and low rank males (Goodall, 1986; Nishida, 1990; Boesch, 1996). They predominantly eat vegetables but hunted animals make a non trivial part of their diet. Except from mother-son relationships, food sharing is not widely practised even though in some rare case it is used to ease occasional conflicts (Nishida, 1970; Mc Grew, 1979; De Wall, 1989). Intra-group relationships are generally quite relaxed because of the peace-keeping role of the α-male, but periodically subordinate males form coalitions to challenge the dominant individual and substitute it with a challenger (Nishida, Hosaka, 1996). Inter-group relationships, instead, are inevitably more violent and aggressive but the relative attractiveness of

shown to have profound impact on the results, in what follows attention is mostly paid to male relationships.

the contested resources does not seem to play and important role (Manson and Wrangham, 1991).

While their pacific and non violent character is increasingly disputed, the bonobos – diverged from the CA together with chimpanzees about 5 millions years ago, and from chimps 1-2 millions years ago- have a social structure very different from their nearest cousin. The 'political scene' is dominated by female-based coalitional behaviour, and intra-group violence is virtually absent (White, 1996; Hohman, Futh, 2002). Food sharing is at its peak among the discussed species and it is frequently exchanged against sexual favours, both in homosexual and heterosexual relationships (Badrian and Bardian, 1984; Kano, 1983, 1990; Fruth, Hohman, 2002) . Data are still insufficient to assess inter-group relationships, even though previously neglected wounds are increasingly observed, testifying for the possibility of a less friendly character and a less marked difference from chimpanzees (Boesch, 2002; White, 1996).

From this possibly oversimplified summary, then, which characteristics can be attributed to the CA? Since, as stated, they must be present in all the descendants, humans included, it seems plausible and conservative enough to derive that the CA's social structure was a semi-closed group with a clear (probably male-based) dominance hierarchy, regulated by arms-length relationships and fission-fusion mechanisms made operational by a considerable presence of lone males travelling from one group to another. Food procurement basically consisted of gathered vegetables, with a very scarce possibility of sharing, possibly except from mother-son relationships. Accordingly, coalitional behaviour could be present but barely besides

very strict kin relationships, and there is no indication that the rule was different from competitive and unsupportive relations. There is no doubt, on the other hand, that violence dominated encounters between strangers, whether or not group composition permitted to discriminate between intra- and inter-group relationships. Very importantly for what follows, finally, it has to be said that stability of such groups is very difficult to assess since it surely depended on the resources distribution (which is not known with certainty), but it is to be excluded that resources other from the sexual ones, and especially territoriality as such, were defended against intruders (Wrangham, 1987).

To conclude this review of the anthropological evidence and theories about the three stages of human evolution which the paper is concerned with, the last step is the discussion of the process of state formation, i.e., the stage which naturally attracted most of the scholars' attention. According to the perspective of the paper, among the various distinguishing features which define the essence of state organization (the monopoly in the use of force, the appearance of social stratification, a functional hierarchy) the most appropriate one seems the substitution of fission as a mechanism to regulate conflict during the life-cycle of social groups: 'All political systems except true states break up into similar units as part of their normal process of political activity. Hunting bands, locally autonomous food producers, and chieftaincies each build up the polity to some critical point and hen send off subordinate segments to found new units or split because of conflict over succession, land shortage, failure by one segment to support another in intergroup competition or hostilities, or for some other reason. These new units grow in their turn, and split again. *The state is a system*

specifically designed to restrain such tendencies (Coehn, 1978a, p. 8, enphasis added).

In turn, the focus on the substitution of fission as the key diagnostic trait of the passing to state organization clearly makes a reference –as a necessary condition, if not a sufficient one[16]- to the full development of agriculture and sedentarism on the side of economic structure, with the co-evolving proliferation of individual property rights critically combining with geographical barriers in restraining people's mobility (see Allen, 1997, and Bowles and Choi, 2003).

In this way, it is then possible to accommodate the different single-cause theories which have been variously proposed, every one with its favoured confirming example but with an –equally easy to find- appropriate falsifying counterexample. So, for instance, it is possible to appreciate the validity of the population pressure approach, both in its variant stressing the accumulation of property rights in key resources by a ruling elite, which extracted labour from peasants in exchange for access to essential land, protection from outside dangers and various benefits from central organization (Johnson and Earle, 1978; Earle, 1991). Or in the attractive variant of the circumscription theory, by which early States emerged in geographically circumscribed areas of Latin America and Middle East as a result of

16 Notably, between the advent of agriculture and the emergence of primitive states there is a gap of about 4000 years. On the one hand, this emphasizes the role of the slow co-evolution of property rights in restraining fission while, on the other, it has allowed a limited number of sedentary societies to remain egalitarian (see Boehm, 1999, ch. 5). The hypothesis that the passing to agriculture was determined by climate change is contained in Richerson, Boyd, and Bettinger (2001). AN important distinction in the debate about the origins of the state is that between primary and secondary states (See Price, 1978).

the joint effect of external conquest and the impossibility to fly to other lands by the conquered peasants (Carneiro, 1970).

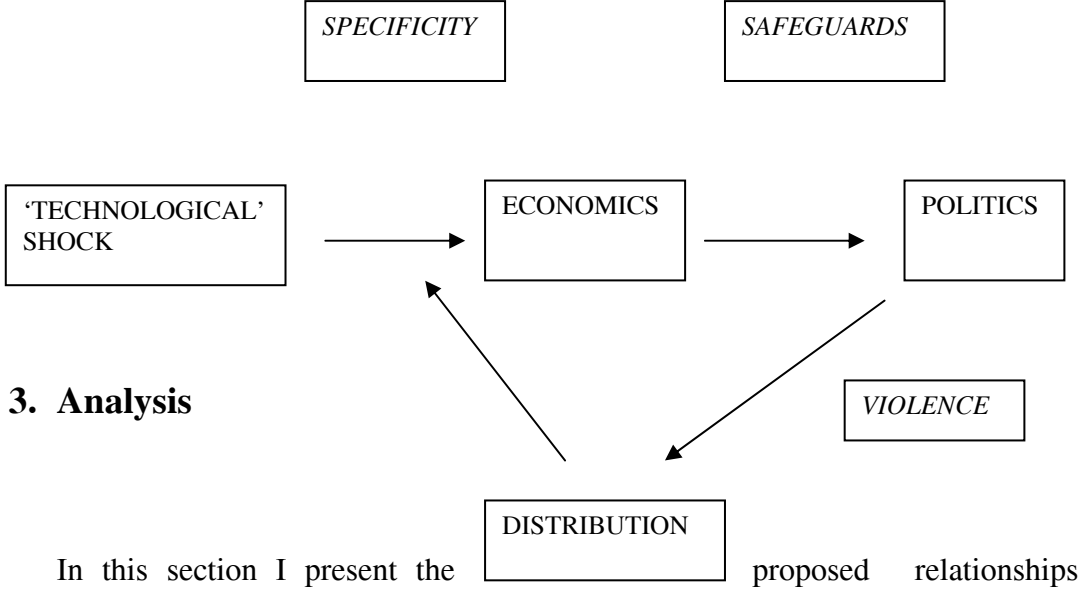
Moreover, the reference to the combination between the full development of agriculture and the design of the mechanisms to restrain fission, with surplus, storage, and specialization commanding the addition of coercion to culture to implement a particular distribution among the many possible and, ultimately, to close the circle between community and meaning (Gellner, 1989), relate also to the two previous and most respected anthropological approaches to the evolution of primitive States, associated to the names of Service (1975) for the functional tradition and Fried (1978) for the Marx-inspired conflict tradition. In the first case, the increased complexity of the social life creates the need of centralized organization –the best example being the irrigation problem (Hunt and Hunt, 1976)-, and the resulting social stratification between a ruling elite and a ruled mass is seen as a voluntarily accepted and a basically legitimated consequence of that –the best example being the supernatural powers attributed to the king (Coe, 1981). In the second, on the contrary, social stratification, intended as the result of competition for unequal access to scarce resources, is found as the first mover, with State organization –both in its practical and super-structural aspects- interpreted as the necessary instrument to perpetuate the conquered privileges for the ruling class (see also Haas, 1981).

As discussed in the Introduction with reference to the theory of the capitalistic firm, and even more in the case of the origins of the State because of its more universal character, however, it seems that single-cause theories are not really able to do their job, for it is even too easy to find elements of every one of them in the actual

historical examples. Naturally, none of the relevant theorists is so naïve to deny such co-existence and the issue ends up by revolving around temporal primacy. It is, however, precisely this sequential timing that case material from history and ethnography tends to inevitably present in different ways in different times and places[17]. A more prudent and reality respectful perspective, therefore, can be found in the so-called systemic approach, that is, an approach recognizing that: 'It is now becoming clear that there are multiple roads to statehood, that whatever sets off the process tends as well to set off other changes which, no matter how different they are to begin with, all tend to produce similar results. It is this similarity of result, I believe, that has clouded the issue of causality. (…) . The reason for this is clear. *Once a society begins to evolve more centralized and more permanent authority structures, the political realm itself becomes an increasingly powerful determinant of change in the economy, society, and culture of the system. After the tendency to centralized control has triggered, the hierarchical structure itself becomes a selective determinant that feeds back to all the sociocultural features to make them fit more closely into its overall pattern*.' (Coehn, 1978a, p . 8, emphasis added).

In this sense, the circular relationship between economical, political and distributional aspects introduced in the next section may seem a useful theoretical generalization.

17For example, in the three episodes of state formation in the Chad basin in north-eastern Nigeria studied by Coehn (1978b), the first two, referring to Borno and Combina, are an instance of a military success of nomads over sedentary agriculturalists, testifying for a conflict-based approach because of the primacy of social stratification (the nomads were also successful in insisting on monopolize key positions soon after, indeed). The latter, however, the Pabir-Biu case, is an instance of a sedentary agriculturalist people without pre-existing social stratification that developed a state-like organization



3. Analysis

In this section I present the proposed relationships between specificity, political organizations, and the associated modes of regulation of violence and distribution. More precisely, exogenous 'technological' conditions (occasional benefits from group living –e.g. defense against predation-, communication abilities, climate changes) determine the basic type of economic activity (gathering, hunting, agriculture) and the required specificity of the investments (generic, group-specific, bilaterally specific). The resulting safeguards are expressed in political terms (Hobbesian state of nature, egalitarianism, state organization), and in turn the way these political organizations regulate the level of violence in the society ('violence of all against all', collective moralistic aggression, 'organized violence') implements a particular distribution of goods and power in the society (individual net productivity, sharing of large game meat, subsistence and residual claiming), which reinforces the initial kick in terms of the economic structure (fig.1).

on its own, to defend its territory. Naturally, even in this case there are external pressures but the benefits from centralization seem to come first.

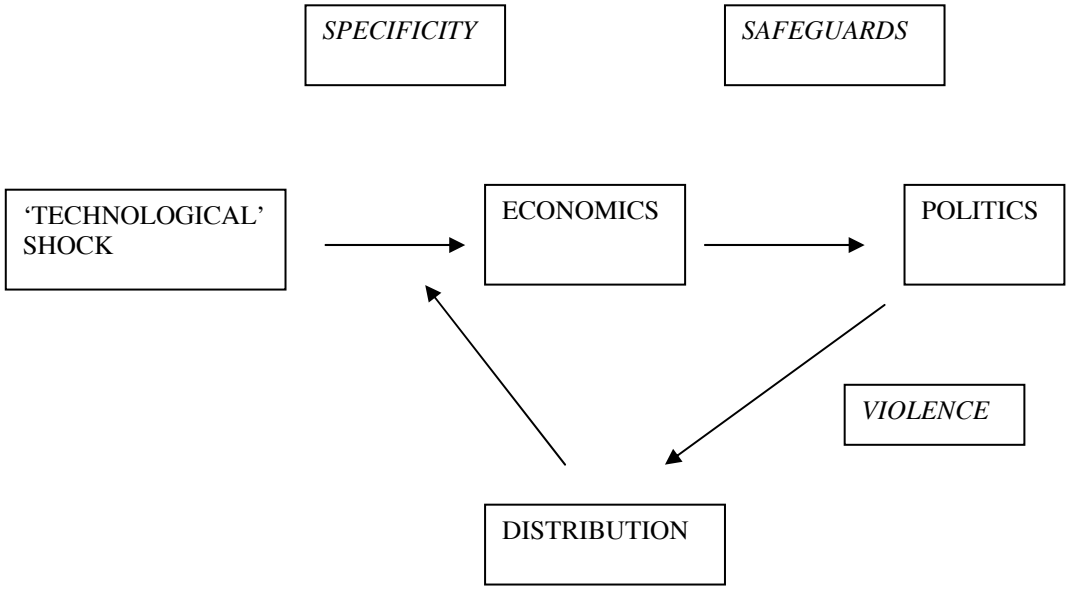


FIG.1

Introduced only for expositional convenience, the equations below are a variation on a famous and appropriate model by Vehrencamp (1983), which analyzes the egalitarian vs despotic character of a given society by studying the allocation of resources between a dominant individual and a group of subordinate individuals. While in her original model she makes such allocation dependent on exogenous ecological factors such as group size and the availability of alternative patches, which in turn determine the benefit of group living and the cost of dispersal, in the following I make the cost and benefit of group living dependent on the production and the enforcement functions, which in turn are determined by the above exogenous 'technological' factors. Despite these and other modifications to be introduced below, however, the model continues to share with Vehrencamp's the characteristic of being a zero sum game optimization model which maximizes the dominant individual's share of resources, given the subordinates' outside

options - joining other groups or remaining alone. As usual in the economic formalizations of the problem, the specificity of the investments enter the problem by modifying the agents' outside options[18].

To introduce some notation, let $W(k_s, n)$ indicate the production function with n representing the group size (not including the dominant individual), and $k_s = [0,1]$, $s=G, L$, the degree of investments' specificity, respectively, to the group or to a piece of land. For the moment, just assume $W_n^{'} > 0, W_n^{''} < 0$, and $W(1,n) > W(0, n)$. Then let $P(n)$ be the enforcement function, with $P_n^{'} > 0$, and $P_n^{''} > or < 0$ depending on whether specialization between producers and enforcers has already taken place or not. Finally, let W_α and W_ω respectively indicate the dominant and the subordinates shares of the total production, with $W_{\omega'}$, W_1 representing the subordinates' outside options, that is, their total 'fitness' in joining other groups or remaining alone.

Exploiting the material reviewed in the previous section, therefore, the three stages of the human evolution which the paper is concerned with can be described as follows:

(i) *competitive-gathering equilibrium.*

In this stage, which in terminology of Hirshleifer (1995) can be called 'amorphy' or scramble competition, groups form on the basis of occasional

18 See De Meza and Lockwood (1998), and Nicita (1999).

benefits such as defense against predators, or the temporary availability of food resources. The absence of sophisticated communication abilities prevents both joint production and its separation from policing, not to speak of specialization. As a consequence, individual investments are generic with respect to both other people and the land they live on, and the economy is therefore based on simple gathering, with production, consumption and protection all performed in a single step. Except from the fluidity guaranteed by the fission-fusion mechanisms, no particular safeguards are in force, and politically the situation amounts to what we call now an Hobbesian state of nature with its characteristic 'violence of all against all'. It is this physical difference among individuals in applying violence that, together with the associated operation of the free-exit option, determine the distribution of goods and power in the 'society'. In short, every one takes what is able to gather and defend (fig. 2)[19].

[19] Remarkably, there is an analogy with competitive equilibria, especially in the most modern versions in which traditional definitions –for instance, the availability of a large number of homogenous suppliers- are substituted with situations in which every individual simply leaves the others indifferent with respect to his presence or absence (Makowski and Ostroy, 2001). Of course, here there is no specialization, no recognized property rights and so no exchange. But there are opportunity costs –namely, in the choice between producing or predating- and so implicit prices and competitive pressures on behaviours. Hence a formulation in terms of equilibrium can be guessed behind life-time choices like those, for example, gorillas are faced with: 'Most males either leave the natal group and become solitary, or become subordinate followers in natal groups where they may breed and may eventually become dominant.' (Watts, 1996, p. 18). Albeit in a different context, the issue has been treated formally (see Piccione and Rubinstein, 2005).

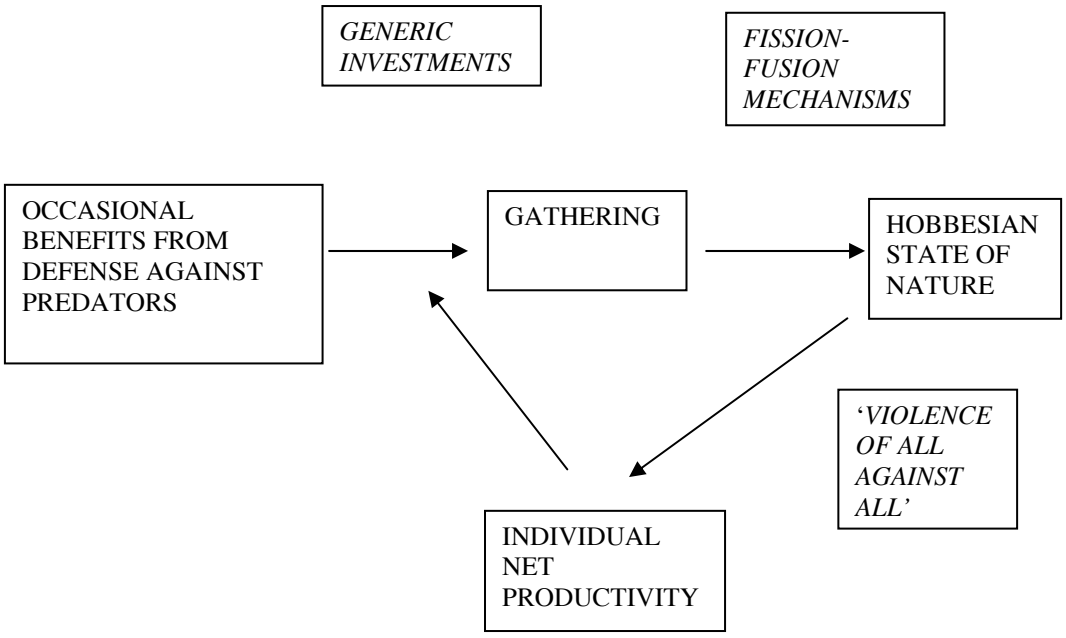


FIG. 2

The three basic features of this politico-economic structure –the absence of joint production, of the separation between production and policing, and of economic specialization- can be described by the following three equations, admittedly the most crude among those to be discussed. The first gives total production (simply the sum of individuals' net production), the second identifies the absence of specific investments with complete liberty to go, both ex ante and ex post[20], and the third, incorporating the assumption of differences in physical force, illustrates the way production ends up to be distributed:

[20] Outside options' payoffs are fixed to a constant (x) for convenience but survival is not a necessary feature of the represented situation.

(1) $W(k, n+1) = \sum_{i=1}^{n+1} [W_i(0,1) - P_i(n)]$,

(2) $W_\omega = W_{\omega'} = W_1 = x$,

(3) $W_\alpha = W(k, n^*+1) - n^* x > x$,

with n^* such that $P_n' = x$.

(ii) *egalitarian-hunting equilibrium.*

After the emergence of symbolic culture in the late Paleolithic, the new conditions represented by the capacity for mental representations of groups and the possibility of communication facilitate the beginning of joint production, that is, the passing from a gathering economy to hunting. In turn, as best exemplified by a collective and -in the relevant time horizon- irreversible decision such as to migrate in a particular place to hunt a particular prey[21], this require group-specific investments in the sense that, after the decision, every hunter's effort has more value in combination with that of the other group's members than in alternative

[21] It is important to note that hunter-gatherers communities remain fission-fusion societies. This is a necessary condition for the operation of group selection on individually disadvantageous but group beneficial traits (Sober and Wilson, 1998). The importance of collective decisions, crucial for survival in particular conditions, for advancing the relevance of group-selection is discussed in Boehm (1996). The basic reason why group-specificity increases the power of group selection is that it increases variation between groups and decreases variation within the group.

uses but, inside the group, they are to a large extent fungible[22]. Lacking one-to-one lock-in, the hold-up threat a single hunter is faced with involves the entire group, and the consequent safeguards would require him eventually bossing the entire group. All the group's hunters share the same problem, though. So the end result is the ex ante guarantee of the ex post group's bossing over eventual individual deviations, as appropriately summarized by Boehm (1993) with the notion of 'reverse dominance hierarchy'.

More precisely for the present context, recalling that the hold-up threat refers to the renegotiation of previously agreed distributions, or to the diminished provision of quality or effort, the result is a norm which, regulating these two contingencies, functions as an investments' safeguard against the two kinds of the hold-up problem group-specificity gives rise: one of the group against the individual, and the other of the individual against the group. In the first case, such a norm is enforced by the individual liberty to join other groups (a sort of micro-foundation of groups). In the second, it is enforced by a group-selection evolved cultural constraint on the process of self-understanding (a sort of macro-foundation of individuals, see footnote 13)[23]. Together with the difficulties to attribute

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22 This of course is not to deny differences in ability, which in fact are rewarded in related domains such as reproductive success (Kaplan and Hill, 1985). Not yet available surplus and specialization, however, such differences cannot accumulate socially and become so big to justify, for example, a team-production solution *à la* Alchian and Demsetz (1972).

23 The cognitive functions of institutions are a well-established phenomenon in the sociological institutionalism, though often confused with power issues (Douglas, 1986; DiMaggio and Powell, 1991). As for hunter-gatherers' societies, it has to be noted that physical violence is mostly restricted to grave sexual crimes (Knauft, 1991). However, when violence is more generally interpreted as a variegated class of constraints on behavior, it presents at least overlapping domains with the concept of institution. In this respect, social cognitive neuroscience now allows to dub as naïve the two specular long-standing views according to which, on the one hand, society is an objectively knowable entity

individual merit and the positional characteristics mentioned in the Introduction, it is then possible to rationalize the absence of leadership and social stratification as the resulting egalitarian safeguards in the political realm. Collective moralistic aggression to curb innate tendencies to up-startism and free-riding is thus a coherent way to manage violence and enforce the implicit agreement, while sharing of large game meat, finally, is the natural distributional result which, in its own, reinforces the tendency and the incentives to restart the initial process (fig. 3).

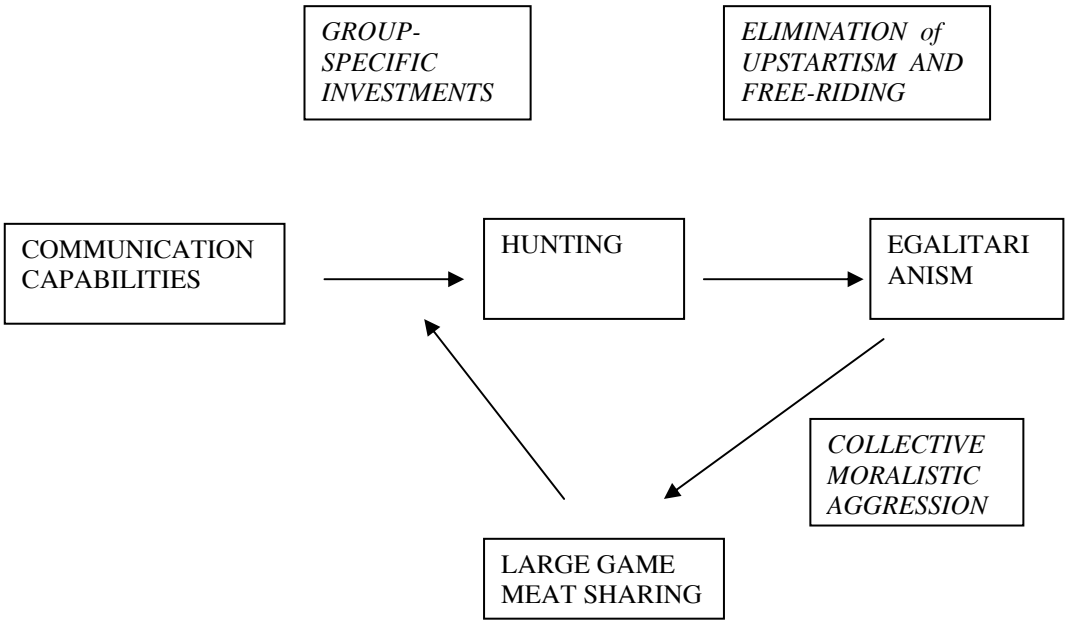

FIG. 3

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while, on the other, the individual is an isolated and inaccessible unit (see Lieberman and Pfeifer, in press).

As in the preceding case, the three following equations can be used to represent the two basic changes in the politico-economic structure – joint production and the separation between production and enforcement. While equation (4) mimics equation (1) in expressing total production, equations (5) and (6) summarize the group-specificity assumption (ex ante but not ex post liberty to go) and the egalitarian sharing rule.

(4) $W(k, n+1) = W(k_G = 1, n\ +1) - P(n\ +1)$,

(5) $W_\alpha = W_\omega = W_{\omega'} > W_1 = x$,

(6) $W_\alpha = \dfrac{W(k_{G,} = 1, n^* + 1)}{n^* + 1} - \dfrac{P(n^* + 1)}{n^* + 1}$,

with n^* such that $W' = P'$, and $P'' > 0$, confirming that small numbers are a necessary condition for the whole arrangement.

(iii) *specialized-stratified-agricultural equilibrium.*

Well after climate change prompted agricultural development and the consequent property rights revolution, naturally, people's mobility ended up by being restricted by the availability of reachable cultivable land. Hence the crucial disappearance of fission as a mechanisms to regulate conflicts.

Together with the first appearance of a storable surplus, this implied another revolution in the division of labour, where producers and enforcers specialized in different jobs requiring different but bilaterally specific investments (fortified walls and irrigation systems, for example). Politically, the necessary safeguards for peasants amounted to being defended against internal and external raids, while for the ruling class they were the legitimate control of force. In turn, this arrangement implemented a distribution of the resources based on the payment of taxes for the part exceeding the subsistence needs from peasants to the ruling class, so that for the first time the accumulation property of social differences made the process largely irreversible. Accordingly, no claims to overall efficiency or simple exploitation can be supported by this scheme, except for the obvious facts represented by the its universal spreading as well as its continuing use of force against internal rebellions and for external conquest (fig. 4)[24] .

Formally, equations (7)-(9) represents the abandonment of joint production in favour of specialization, the required bilateral specific investments (no liberty to go, both ex ante and ex post), and the discussed distribution, which confirms the possibility of a U-shaped form for the evolution of despotism and inequality in human societies along the three stages under consideration.

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24 Kaplan and Lancaster (2003, p.193) report calculations according to which fitness for peasants must have seen a remarkable increase in the passing from foraging societies to the first empires (hence $W_{\omega} = s > x$ in eq. 8). The work by Betzig (1986), and the subsequent arguments by Kaplan and Lancaster (2003), however, remind the enormous consequences of the empires' status differences and confirm the validity of a prudent approach in evaluating their efficiency properties.

(7) $W(k_s, n) = \sum_{\omega=1}^{n} W(k_s = 1,1)$,

(8) $W_\omega = W(k_s = 1,1) - T = s > W_1 = W_{\omega'} = x$,

(9) $W_\alpha = n * T - P(n) > s$,

with n^* such that $P' = T$, and $P'' < 0$ to confirm cloudiness in the issue of efficiency (specialization) versus equity (social stratification).

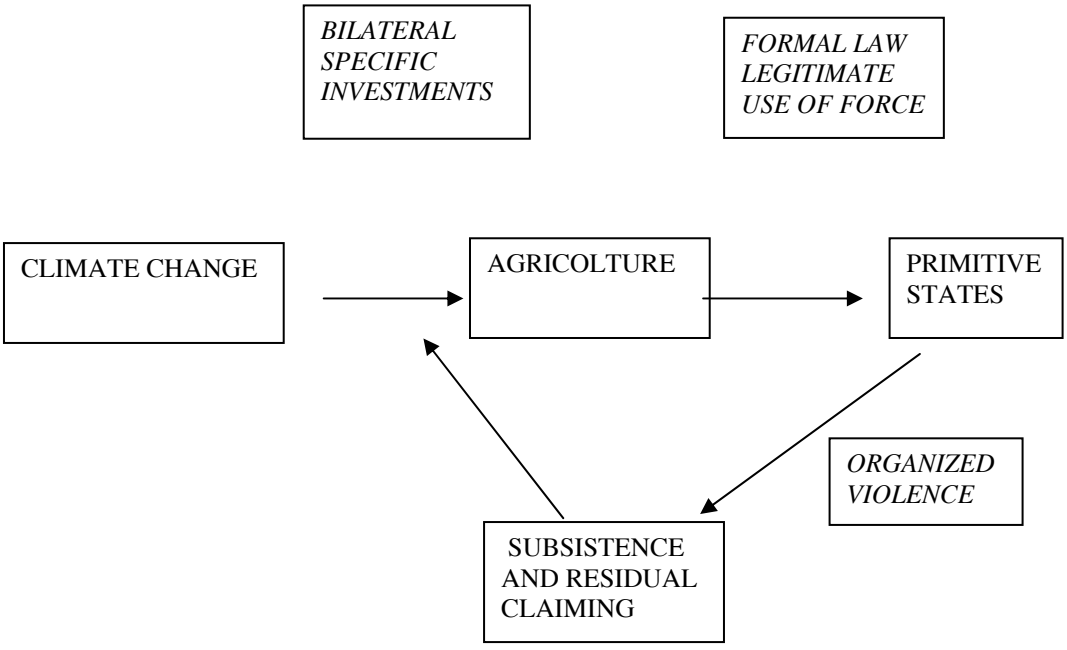

FIG. 4

4.Conclusion.

This paper presents a single framework for thinking of the evolution of human societies along its earliest stages. It is ambitious, in addition, because it emphasizes the two-way link between the economical, the political, and the distributional sphere, and treats group-level institutional mechanisms to restrain behaviour and implement cooperation, along with the more familiar mechanisms represented by competition and coercion. Because of methodological individualism and the separation between distribution and efficiency, these results are hardly a conclusion of the common economic approach to institutions but are critical to an interdisciplinary understanding of the evolutionary basis of modern societies. Admittedly, the nature of the subject implies that the ratio of evidence to interpretation is lower than usual, and so the main deficiency to be addressed is the lack of a rigorous formalization to better appreciate continuity and change in the passing from one stage to the other, as well as modifications in the relative importance of the different levels of selection.

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