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## WORKING PAPER SERIES

**Institutions Are neither Autistic Maximizers nor  
Flocks of Birds : Self-organization, Power, and  
Learning in Human Organizations**

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# Institutions Are neither Autistic Maximizers nor Flocks of Birds : Self-organization, Power, and Learning in Human Organizations

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## ACNOWLEDGEMENTS:

This work is significantly based upon Dosi (1995), Dosi, Marengo and Fagiolo (2005), and Dosi and Marengo (2015), and Dosi and Roventini (2016) , but builds upon a larger and expanding community of scholars painstakingly trying to depart from the prevailing Ptolemaic paradigm of economic theory founded on the primitives of utility maximization and equilibrium. . We gratefully acknowledge the support by the European Union's Horizon 2020 Research and Innovation programme under grant agreement No. 649186 - ISIGrowth

## ABSTRACT

In this work we shall attempt an *excursus* across fundamentally different streams of modern interpretations of the “ primitive entities” constituting the social fabrics of economic systems. Behind each specific interpretative story, there is a set of *ceteris paribus* assumptions and also some fictitious tale on a 'once upon a time' reconstruction of the theoretical primitives of the story itself. Pushing it to the extreme, as we see it, there are in the social sciences two archetypal (meta) tales. The first says, more or less, that 'once upon a time' there were individuals with reasonably structured and coherent preferences, with adequate cognitive algorithms to solve the decision-action problems at hand, and with self-seeking restrictions on preferences themselves. They met in some openings in the forest and, conditional on the technologies available, undertook some sort of general equilibrium trading or, as an unavoidable second best, built organizations in order to deal with technological non-convexities, trading difficulties, contract enforcements, etc. In the alternative tale, 'once upon a time' there were immediately factors of socialization and preference-formation of individuals, including some institutions like families shaping desires, representations and, possibly, cognitive abilities. Non-exchange mechanisms of interactions appear in the explanation from the start: authority, violence and persuasion of parents upon children; obedience; schools; churches; and, generally, the adaptation to particular social roles. Here 'institutions' are the primitives, while 'preferences' and the very idea of 'rationality' are derived entities.

Which of the primitive tale is chosen bears far-reaching consequences for the interpretation of socio-economic organizational forms and their dynamics, and involves different theoretical commitments on the interactions between agencies and structures in human affairs. In this work , we argue for the need of moving away from rationality-cum-equilibrium interpretations and of focusing on the varying balances between self'organizing dynamics and institution-shaped constraints .

### Keywords

Institutions, rationality, self-organization, hierarchies, power, endogenous preferences, motivations

## 1. INTRODUCTION

If there is an ultimate difference between social and natural sciences, it probably does not regard the methodology of the analysis but, even deeper, the “primitives” of the theory and their awareness by the practitioners.

A classical physicist starts from bodies, masses, distances, etc., henceforth tells a story of forces, etc.. A quantum mechanics physicist starts from with particles and waves. An evolutionary biologist starts with organic molecules and goes all the way up to multicellular entities, species, etc., all linked by mechanisms of mutation, recombination and selection, possibly on multidimensional nested scales.

What does one have in social sciences? In our view we have much less in terms of commonly accepted primitives, together with a much greater hubris and casualness in moving from the primitives to the formulation of analytical “tales” accounting for the historical patterns of social and economic change.

In the following, we shall attempt an *excursus* across fundamentally different streams of modern interpretations of the primitives of the entities constituting the social fabrics of economic systems.

It is useful to start by pointing out the extreme boundaries on the distribution of “primitive” theoretical building-blocks which are set, on the one side, by nearly theological axiomatizations about human behaviour derived from simple invariant principles (resulting in an unconditionally self-seeking forward-looking rationality a la Becker (1976), or older religious theories on grace, predestination and temptation) and, on the opposite side, by purely 'functionalist' or holistic theories of collective dynamics.

Interestingly enough, while there might be little scope for a constructive debate with fundamentalist believers, most of the challenging controversies concern precisely the relative interpretative merits of theories, all indeed acknowledging some role to both motivational microfoundations and system-level effects, which, however, differ profoundly in the ways they describe and combine these two levels of analysis. In our view, a fruitful reassessment of 'foundations' rests precisely at this level, which is where the 'grand' debates in social sciences have found their ultimate ground — from Hobbes to Smith all the way to Durkheim, Weber, Veblen, Schumpeter and Schmidt, just to name a few). Without any ambition of thoroughness, let us try to highlight some of these foundational issues.

## 2. ON THE ULTIMATE PRIMITIVES

Behind each specific interpretative story, there is a set of *ceteris paribus* assumptions and also some fictitious tale on a 'once upon a time' reconstruction of the theoretical primitives of the story itself. Needless to say, most of (but not all!) scholars realize that the tales are just tales, but they still influence the way that interpretative stories are told, the selection of the dominant variables, the modelling assumptions, etc.

Pushing it to the extreme, as we see it, there are in the social sciences two archetypal (meta) tales. The first says, more or less, that 'once upon a time' there were individuals with reasonably structured and coherent preferences, with adequate cognitive algorithms to solve the decision-action problems at hand, and (in most cases) with self-seeking restrictions on preferences themselves. They met in some openings in the forest and, conditional on the technologies available, undertook some sort of general equilibrium trading or, as an unavoidable second best, built organizations in order to deal with technological non-convexities, trading difficulties, contract enforcements, etc. Here, clearly, the rough 'primitives' of the tale are preferences, endowments and given technologies (of production and

exchange), while 'institutions' or 'organizations' are derived entities. In this ultimately functionalist approach, institutions emerge to address very specific economic needs of society (Ogilvie, 2007). The research agenda for moving from primitives to derived entities is straightforward: in order to understand institutions we need to reconstruct the fundamental economic problem that they are addressing and to reconstruct the interactions among fully rational, self-interested individuals that has brought them into being. As Sheilagh Ogilvie aptly puts it, within this framework, “whatever is, is right” (Ogilvie, 2007). That is, a sort of ‘Hegel for the shopkeeper’ (‘ whatever is rational is real , whatever is real is rational ...’) !

This research agenda has indeed being pursued vigorously by at least two generations of economists and economic historians, so that, today, a wide array of institutions such as craft guilds, sharecropping, serfdom, etc. has been reinterpreted using this “efficiency” framework. Note that the approach implicitly contains a view on the drivers of institutional change: when the primitives (preferences, endowments and technologies) change the prevailing institution may become no more efficient and so a new meeting in the opening of the forest is necessary in order to find more suitable arrangements.

In the second and alternative tale, the premises are radically different: 'once upon a time' there were immediately factors of socialization and preference-formation of individuals, including some institutions like families, tribes, etc. shaping desires, representations and, possibly, cognitive abilities.

Non-exchange mechanisms of interactions appear in the explanation from the start: authority, violence and persuasion of parents upon children; obedience; schools; churches; and, generally, the adaptation to particular social roles. Here 'institutions' are the primitives, while 'preferences' and the very idea of 'rationality' are derived entities. These notions are very familiar indeed to all social disciplines, ranging from anthropology to social psychology to sociology ( picking three out of a multitude: see Laing and Esterson ,1970, on the family ; Milgram, 1974, on obedience ; and B. Moore,1958, on social submission ), except contemporary economics !

Certainly, with enough refinements, both basic tales become analytically respectable and in many situations observationally indistinguishable. So, for example, in the 'rational' tale one can easily admit that preferences, too, are endogenous, but on a longer time scale. However, in principle, institutions and organizations ought to be considered relatively plastic and adaptable, while the interests, motivations and menus of strategies available to the agents ought to be relatively invariant. Conversely, in the 'institutionalist' tale it is easy to account for the influence of individual preferences and strategies upon the evolution of social organizations. However, one is inclined to view institutions as the relatively inertial entities and agents' motivations and behaviours as comparatively flexible and adaptive.

Foundational tales obviously influence also the derived interpretive heuristics. Consider the problem of 'why does one observe organization x at time t?. In the first perspective, one would start answering by focusing upon the interests of the agents involved in such an organization, the tasks that the organization is meant to handle and the technologies available, and then try to impute its existence to the intentional efforts of the agents to 'do their best', given the constraints. (The exercise, as Granovetter (1995) remarks, is often riddled with a good deal of ideological reasoning). <sup>1</sup> In contrast, in the second perspective, one would look much more carefully at the organization(s) that existed at

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<sup>1</sup> As noted by Ogilvie (2007) in the strongest versions, the efficient account of institutions is completely oblivious of their potential re-distributional role among social groups.

time (t-1), at the linkages between organization x and other institutional entities, and then try to tell an explicitly dynamic story on how one got from the state at (t-1) to the state at t. In this respect, the answer to 'why something exists' relies a good deal on the account of how it came about.

Note that we are not suggesting that the first story is institution-free and the second is agent-free. Consider, for example, Williamson (1995) (which certainly belongs to the 'rationalist' camp as defined here): he emphasizes that institutions intervene in the parametrization of the economic problem at hand — in his case, the transaction-governance problem— and also exert a (weak) influence on the characteristics of the agents. Of course, they play a more prominent role in any 'institutionalist' story, and they do so by shaping and constraining the opportunities, incentives and motivations of the actors (Granovetter, 1995).<sup>2</sup> We would add that they also help shape the representations that agents hold of what their interests are and of the instruments at their disposal to pursue them (i.e. their 'rationality').

The presumption in strong versions of the 'rationalist tale' is that agents somehow possess a kit of algorithmic devices sufficient to adequately represent the environment in which they operate and to choose the appropriate courses of action. 'Boundedly rational' versions — such as Williamson's in this issue or the contributions that come under the heading of 'evolutionary games' in economics — relax the assumption by allowing computational and memory limitations, but still tend to define 'bounded' rationality as an imperfect approximation to the 'unbounded' one.

At the opposite end of the spectrum, the 'institutionalist tale' finds intuitive links with all those inquiries, such as cognitive psychology and artificial sciences, which start from the presumption of general (nearly ontological) gaps (a) between what one sees and believes, and 'what is really out there'; and (b) between what one could notionally do, given the environmental constraints and opportunities, and what one is actually capable of doing. As a consequence, in this perspective, the challenge to the theory is to investigate the nature and process of emergence of particular cognitive frames, interpretative categories, patterns of behaviours, routines, etc. (Within an enormous and diverse interdisciplinary literature, examples are Shafir and Tversky, 1992, on reasoning and choice ; Gigerenzer and Brighton, 2009, on heuristics ; Holland et al. ,1986, and Lakoff,1987, on adaptive learning and category formation; and the analyses of behavioural routines in Nelson and Winter,1982; Cohen et al. ,1996; Dosi and Egidi,1991; Becker, 2005)

Related issues concern the separability between cognitive and motivational dimensions of decision-making. Clearly, the 'rationalist tale' demands such separation between 'what one desires' (i.e. goals, utilities, etc.) and 'what one knows' (i.e. the assessment of the status of the environment and the means available to achieve given goals). Conversely, the 'institutionalist tale' is comfortable also with blurred coupled dynamics between the two, possibly yielding endogenous preferences, coexisting contradictory models of cognition and action in the heads of the same individuals, phenomena of cognitive dissonance, etc.<sup>3</sup>

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<sup>2</sup> A version of the 'institutionalist tale' trying to establish a detailed link between the behavioural motivations traditionally emphasized by 'rationalists' (such as sheer utility maximization), on the one hand, and other motivational factors (including moral and ethical ones), on the other, is 'socio-economics' (see Etzioni, 1988). Incidentally, note that, as the latter approach shows, non-utilitarian motivations can be brought into the picture without giving up 'rational' (at least in the sense of purposeful and coherent) decision-making. But see also below.

<sup>3</sup> Relevant discussions in these respects are Cohen et al. (1972), Earl (1983, 1992), Elster (1979, 1983). A thorough introduction is in March (1994).

Furthermore, the “rationalist tale” implies, as noted by McCloskey, that economic self-interest must be the predominant motivational drive underlying all economic choices (McCloskey, 1998). In McCloskey’s view this strong assumption is at odds with Adam Smith’s view who, in his *Theory of moral sentiments* (1759), developed a rich taxonomy of drivers of behaviours in which “utility” – roughly approximated by his notion of “prudence” – played a relatively minor part. Other relevant “pagan” and “Christian” drivers ranging from love to honour, from *charitas* to dignity played a major role in characterizing what human beings do *even in the economic sphere* (McCloskey, 1998). The key issue is that given the interactions among motivational drives in the decision making process (and possibly even in the representation of the choice itself), approaches whose “primitives” assume exclusively economic self-interest as motivation can easily result in exceedingly reductionist interpretations of the dynamics of social change (McCloskey, 1998 and 2016).<sup>4</sup>

We mention these basic dichotomies in the underlying views of social interactions because they also cut across the contributions that follow and might be where some of the interpretative divergences ultimately rest.<sup>5</sup>

### 3. POWER, AUTHORITY AND HIERARCHIES

A deeply related 'foundational' issue concerns the nature of hierarchies, the notion of authority and the associated notion of power. Again, for the sake of simplicity, let us suggest two caricaturally simple archetypes.

The first one proposes that (a) the notion of 'power' does not have any clear analytical status; (b) the basic unit of analysis ought to remain as much as possible that of transactions; and (c) organizations are primarily governance structures. Call this model the exchange view of interactions and organizations. The second, which we shall (improperly) call the political view, holds on the contrary that (a) an essential, although not unique, feature of organizations is their authoritative structure; (b) authority relations are inherently different from exchange relations; and (c) power has an autonomous interpretative dimension.

Here we shall adopt a quite broad definition of power.

**First**, power entails the ability of some agent (the “ruler”, the authority) to determine the set of actions available to the other agents (the “ruled”).

**Second**, it involves the possibility of the authority to veto the decisions or intentions of the ruled ones.

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<sup>4</sup> An intriguing example of the interplay of motivational drivers affecting consumption choices is provided by the recent historical study of English consumers in the 1750-1821 period by Horrel Humphries and Sneath (2015). It is worth quoting their conclusions: “Our findings underline the importance of fashion and tastes, which exerted an independent influence on the ownership of all the items that we examined, but make space too for price and income effect. The relative magnitude of fashion, price and income varied according to the specific item considered, but none should be omitted in an account of the consumer revolution, which our evidence suggests involved a complex interplay between desires and differentiation, and aspiration and affordability” (Horrel, Humphries and Sneath, 2015, p. 855).

<sup>5</sup> Clearly, the majority of economists tend to be more comfortable with the first tale and sociologists with the second. However, it is deeply misleading, in my view, to identify the dichotomy with disciplinary boundaries (a bit along the lines of Pareto, who equated economics and sociology with the study of 'rational' and 'irrational' behaviours respectively). In fact, we personally consider it good news that these diverse perspectives increasingly affect all social disciplines.

*Third*, power relates to the ability of the authority to influence or command the choice within the “allowed” choice set (i.e. the span of control of the “ruled”), according to the deliberations of the ruler himself (this definition echoes in some ways the analysis contained in Luhmann (1979)). Here, in these respects, the units of analysis are the dimensionality and boundaries of the choice sets and the mechanisms by which authority is enforced. As Herbert Simon puts it: “Authority in organizations is not used exclusively, or even mainly, to command specific actions. Most often, the command takes the form of a result to be produced (“repair this hinge”), or a principle to be applied (“all purchases must be made through the purchasing department”) or goal constraints (“manufacture as cheaply as possible consistent with quality”)” (Simon 1991, p. 31).

*Fourth*, the most subtle exercise of power concerns the influence of the authority upon the preferences of the ruled themselves, so that, in Max Weber’s words, the conduct of the ruled is such that it is “as if the rules had made the content of the command the maxim of their conduct for its own sake” (Weber 1978, p. 946). That easily accounts for the fact that “organizations can be highly productive even though the relation between their goals and the material rewards received by employees, if it exists at all, is extremely indirect and tenuous” (Simon 1991, p. 38).

Obedience, docility, identification in the role and in the organization are central elements of such processes of adaptive learning and coordination (classic discussion of these processes are in Milgram (1974), Simon (1976), (1981) and (1993), Lindblom (1977), Lukes (2005), Moore (1958)). Docility offers the inclination to “depend on suggestions, recommendation, persuasion and information obtained through social channels as a major basis for choice” (Simon 1993, p. 156). And, emphatically, such inputs are not inputs to an inferential (let alone Bayesian) decision process. Both cognitive frames and preferences are endogenous to the very process of social adaptation and social learning.

It is crucial to note that the social endogeneity of identity building is exactly the opposite to any type of decision-theoretic model: one learns socially not only what one can do, but, more fundamentally, what one wants, the very interpretation of the natural and social environment one lives in, and, ultimately, the very self-perception and identity of the agents. Indeed, the conjecture we explore in Dosi and Marengo (2015) is that in many circumstances such processes of cognitive and behavioural adaptation yield also much more efficient and quicker coordination patterns.

The political view, of course, does not claim to be exhaustive: command and exchange coexist in different forms within and outside organizations. But it claims — at least as we interpret it — that the sole consideration of exchange relations prevents a full understanding of what goes on within the ‘organizational black box’, of the boundaries between organizations and of organizational dynamics. Indeed, exchange activities are not the prevailing ones in all domains of social life.

Note also that the dichotomy between the exchange and political views is not entirely orthogonal to the previous one between ‘rationalist’ and ‘institutionalist’ foundations. In fact, the political view demands microfoundations involving socially adaptive preferences and behavioural modes (such as ‘obedience’ or ‘identification with the role’ and with the authority)<sup>6</sup> quite at odds with the rationalist tale. Conversely, any strong version of the latter almost inevitably leads to the interpretation of seemingly authoritative relations as the outcome of some sort of voluntary meta-exchange by self-interest seeking, forward-looking agents.

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<sup>6</sup> Classic discussions of these processes are in Milgram (1974), Simon (1976) and Lindblom (1977).



Ultimately, the rationalist tale-cum-exchange view entails a sort of unitary and invariant anthropology, based on well-formed, consistent interests as the basic motivational drives and criteria for action. At the other extreme, the institutionalist tale-cum-political view is naturally consistent with the idea of an irreducible multiplicity of motivational dimensions, and, possibly, with multiple 'identities' coexisting within the same agent. So, for example, the latter perspective builds upon broad historical generalizations such as Hirschman's account of the changing balance between 'passions' and 'interests' in modern Western culture (Hirschman, 1977) or Sen's fascinating discussion of the (sometimes uneasy) coexistence between 'ethical' and 'economic' motives (Sen, 1987). The same phenomena would be interpreted in rationalist/exchange perspectives as varying restrictions on some sort of 'enlarged utility functions' or changing 'social technologies' for the governance of exchanges and production.<sup>7</sup>

Moreover, the 'institutionalist' perspective would see exchanges themselves as embedded in particular institutions (e.g. 'the markets') whose origins and characteristics demand to be explained (on the notion of embeddedness, cf. Granovetter, 1985 and 1995). Finally, note that the political view is quite in tune with the picture of business firms provided by most organizational theorists and business economists alike (cf. Pfeffer, 1981; March and Simon, 1993).

#### 4. WEAK AND STRONG INSTITUTIONALISM

From the choice of primitives stem major dichotomies on the very nature of organizations and institutions more generally. We summarize them in Tables 1 and 2.

In particular, in the latter we distinguish between a “weak” and a “strong” form of institutionalism, where the former has its roots in “exchange primitives” and includes the so-called neo-institutionalism (prominently represented by North and Williamson), while the latter has its roots in political and institutional primitives, with such noble ancestors as Veblen and Polanyi.

And indeed the two archetypes differ also in terms of the relative role attributed to “choice” vs. “structure” in the determination of behaviours and in terms of the importance of history in the dynamics of institutions in general and formal organizations in particular. In particular, they differ in terms of:

- role attributed to individual rationality in the development of collective institutions
- degree of path-dependency and inertia of institutions themselves
- relative analytical importance of choice vs. constraints in individual and collective behaviours
- importance and modes of influence of history and institutions upon preferences and behaviours
- nature of organizations in which agents operate

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<sup>7</sup> Of course, pushing the interpretation to the extreme, one reaches a Becker-type anthropology whereby, for example, the only remarkable difference between Adolf Hitler and Mother Theresa of Calcutta rests on diverse weights of the arguments of their (dimensionally identical) utility function and, analogously, the differences between Micronesian civilizations and L. A. yuppies can be reduced to differences in available social technologies.

Today, the neo-institutionalism paradigm (or weak institutionalism) is probably the predominant analytical outlook in economics. The success of the approach is possibly due by the adoption of a simple and straightforward representation of social institutions in terms of “rules of the game” (North, 1991) combined with “rationalist tale” primitive. In this case, this amounts to standard economic assumptions concerning the rational behaviour of individuals (allowing to describe individual

**Table 1 – Nature of Hierarchies**

<b>“Exchange” view</b>	<b>“Political” view</b>
No analytical status to the notion of power	Essential features of organizations are patterns of power exercise and authority relations
Apparent “power relations” can be explained by asymmetric transactions	Power/authority relations are essentially different from exchange relations and therefore are also autonomous interpretative dimensions
Transactions are the basic units of analysis	Units of analysis include knowledge, organizational forms, behavioural codes, routines, mental frames
Organizations are “veils” covering sets of contracts or bundles of incomplete contractual agreements	Organizations as different from and constitutive of exchange

**Table 2 - “Weak” vs. “Strong” Institutionalism**

	<b>Weak Institutionalism</b>	<b>Strong Institutionalism</b>
<b>Role of institutions</b>	Parametrize system variables; provide menu of strategies	Also embed cognitive and behavioural patterns; shape identity of actors
<b>Primitives of the theory</b>	Perfectly or boundedly rational agents	Institutions as primitives; forms of rationality and perception of self-interest as derived entities
<b>Mechanisms of institutions formation</b>	Mainly explicit and rational “constitutional” processes	Partly unintentional self-organization processes
<b>Efficiency properties</b>	Institutions perform useful coordinating and governance functions, often viewed as	Institutions are ‘carriers of history’, provide rules of the game and reproduce path-

equilibria in some game

independently irrespective of  
efficiency

decision-making using either parametric optimization algorithms or game theory, in cases, in contexts where strategic interaction assumes relevance).<sup>8</sup>

Furthermore, it is worth noticing that, at least since the mid 1990s, the neo-institutionalist approach has been progressively refined in two main directions.

The first direction is the systematic application of the neo-institutionalist approach to historical cases of institutional change, with a particular view at examining the connection between institutional set-ups and economic performance. This stream of research is epitomized by the contributions of Acemoglu, Robinson and their associates (Acemoglu, Johnson and Robinson, 2005; Acemoglu and Robinson, 2012). Interestingly enough, in order to work out a plausible connection between the stylized tale of institutions emerging from a “social contract” among free, self-interested and rational individuals with the actual historical record providing ample evidence of the emergence and persistence of institutional set-ups characterized by inequality and relationships of domination, Acemoglu and Robinson are forced to introduce a distinction between political and economic institutions (Acemoglu, Johnson and Robinson, 2005). In this adapted framework, economic institutions are still essentially defined as the “rules of the game” in the economic sphere (e.g. property rights) endorsed by state in any given moment. Political institutions are, instead, the “rules of the game” governing the power of different social groups in shaping both economic and political “rules of the game” in any given moment. Changes in political institutions are essentially an outcome of the conflict among different social groups. Hence, whenever “narrow” elites have the power to dominate the political process, it is likely that the a country will be characterized by “extractive economic institutions” establishing relations of dominations between different social groups and by sub-optimal economic performances. In this way, the neo-institutionalist research programme moves away from the characterization of the processes of institutional change in terms of the negotiated “constitutional” agreements. Somewhat paradoxically, however, in most cases this results in nesting a very simplified “vulgar” Marxist view of political history into neoclassical microfoundations (cf. Acemoglu and Robinson, 2012).<sup>9</sup>

There is second major theme in the research programme of Acemoglu and Robinson which is worth noticing: the study of the empirical connection between various types of institutions and economic performance. In most cases this is carried out using synthetic and extremely crude indicators representing different institutional configurations (eg, *Polity* Instrumental Variables type of data for representing political institutions).

In this perspective, most of the efforts have been devoted in the design of empirical frameworks which could ensure to tackle effectively the issue of the potential endogeneity of the institutional variable with respect to economic performance. In general the key finding of Acemoglu and Robinson and their associates is that economic institutions establishing secure and clearly defined property rights and a smooth functioning of markets are to be regarded as the major source of long-

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<sup>8</sup> For a very perceptive analysis of the connections between “neo-institutionalism” and neoclassical economics. see McCloskey (2016).

<sup>9</sup> For a devastating review of Acemoglu and Robinson (2012), see Vries (2012)

run economic growth. This, of course, is a predicament that most neoclassical economists have put forward for long time. The success enjoyed by Acemoglu and Robinson arises from the widespread impression that their research has finally provided a rigorous analytical and empirical background for this notion. In fact, at closer inspection, the approach of Acemoglu and Robinson, despite its sophistication, seems not able to provide major insights both on the processes of institutional change and on the connection between institutions and economic performance. The major limit is that the approach provides a characterization of institutional set-ups that is extremely crude, despite its apparent clarity. Acemoglu and Robinson do not take into account the complex relationship between institutional set-ups and their outcomes both in terms of economic performance and inequality. For example let us consider an institutions such as medieval guilds. It turns out that, the economic interpretation is far from obvious. On the one hand, the institution can be seen simply as barrier to entry in production protecting the rents of incumbents. On the other hand, in the medieval economy, guilds were performing a number of other functions such as enhancing the transmission of skills or mitigating credit market imperfections (Ogilvie, 2007). As a result, it becomes difficult to ascribe to any institutions a specific “function” within the economic and social system and, relatedly, to provide a comprehensive assessment of its political and economic effects, without taking the wider context in which the institution was operating (Ogilvie and Carus, 2014). Furthermore, each institution is likely to interact in complex ways with other institutions. All this suggests that providing characterizations of institutional set-ups using generic terms such as “secure property rights”, “state capacity”, etc. run the risk of conflating under the same heading highly heterogeneous phenomena. This shortcoming clearly also affects the construction of synthetic quantitative indicators of institutional set-ups.

The other “neo-institutionalist” direction is the attempt of including a cultural dimension in the process of institutional formation. The main approach in this vein is Greif (2007). Again, *prima facie*, given our discussion in the previous section, this seems to be a promising development. However, it should be noted that the cultural dimension is essentially introduced in terms of “parametric” restrictions in the game theoretic framework, that is, the matrix of economic pay-offs becomes conditioned by a number of “exogenously” given cultural traits (for example, the existence of “collectivist” or “individualistic” attitudes). The behavioural of individuals is still described in terms of straightforward economic maximization. Again, this is a far-cry from the complex approach to decision making of the “institutionalist tale” that we have discussed in the first sections. Furthermore, the empirical operationalization of the approach is doubtful. In most cases, the parameters of the game do not lend themselves to a straightforward empirical characterization (Clark, 2007). Hence, again the approach is dangerously on the border of the “functionalist fallacy” of attributing to institutional set-ups specific functions, on the grounds of the existence of some abstract game-theoretic equilibrium.<sup>10</sup>

## 5. ORIGINS, DYNAMICS AND EFFICIENCY PROPERTIES OF ORGANIZATIONS

Consider the question of 'why organization  $x$  exists'. As already mentioned, there are two types of answer. One involves an explicit account of the dynamics (i.e. how it got to become what it is). The second answer derives necessary and sufficient reasons for its existence from the tasks it performs and its efficiency properties. With the former methodology, admittedly it might be quite difficult to achieve general theoretical propositions, since it involves the identification of classes of processes and sets of initial conditions yielding specific classes of outcomes. But, with the second methodology, functionalist or teleological fallacies are an easy temptation, as vigorously argued by Granovetter (1995) (i.e. 'organization  $x$  exists because it is good at performing function  $a$ ). This need not necessarily be the case, but then the challenge is to show that functional efficiency is a robust

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<sup>10</sup> For a criticism of Greif’s interpretation of the coalition of the Maghrebi traders, see Ogilvie and Carus (2014, pp. 411-416).

outcome of either intentional constructive processes or collective, unintentional mechanisms of selection among a variety of alternative organizational solutions.

It is fair to say that, so far, neither proof is available. On the constructive, intentional side, the game-theoretic route does not seem able to deliver the goods. Without entering into any detailed discussion of the state of the art, one should just recall the hurdles facing selection among multiple equilibria or the implications of the Folk theorem in repeated games (which basically says that any behavioural sequence that one observes can be interpreted as an equilibrium strategy). All this applies to interactive setups involving individual agents and, plausibly, even more to collective entities such as formal organizations or institutions in general.

Alternatively, the selection route is the most rudimentary form of a dynamic, evolutionary argument. It dates back at least to Friedman's *as-if* proposition, according to which, due to some unspecified selection mechanism, observed behavioural traits (and, implicitly, also organizational forms) can be interpreted as if they were the outcome of an explicit optimization process, since no other behaviour would survive in equilibrium.

However, apart from a lot of hand-waving, the analytical results are mainly negative: only under quite restrictive conditions on the selection space, selection mechanisms and initial conditions does such an outcome obtain (cf. Winter 1971, and the critical surveys in Silverberg 1988 and Hodgson 1993).

To sum up, it seems to us that no matter what kind of explanation one offers as to why particular organizations exist, an answer to the 'how' question is unavoidable. This, in turn, implies some explicit dynamic account of how formal organizations — and, more generally, institutions — emerge and change over time. To be brief, let us continue to reason in terms of dichotomous archetypes. The first archetype — call it the *constitutional model*—is based on the idea of intentional interactions among purposeful, forward-looking agents who try to establish ground rules for their cooperative endeavours. In opposition, one may conceive the origin and evolution of organizations primarily in terms of collective, largely unintentional outcomes of interactions — call this the *self-organization model* (with respect to organizational evolution, see Warglien 1995). Needless to say, empirical processes of organizational formation are likely to involve different mixtures between the two modes, but the formal study of the properties of each archetype adds important insights to the understanding of which kinds of interaction mechanism yield which kinds of feasible outcome. Indeed, Ostrom and Crawford (1995), with many other Ostrom et al., are among the best, most fruitful, examples of the intertwining of both processes..

Whatever dynamic story one tells, it naturally involves the question of where the dynamics is leading to (which economists, perhaps too easily, confine to the nature of asymptotic properties of the process). And, symmetrically, one may ask the question of whether one would have got to a certain observed state, say, a certain organizational setup at time  $t$ , irrespectively of any initial conditions, further back in time. As is known, when initial conditions matter and their effect is not vanishing but possibly self-reinforcing over time, one says that the process is path-dependent. Hence, simplifying to the extreme, an integral part of the explanation of 'where one is going' or 'why we are here' is the account of 'where we come from'. Conversely, note that a necessary (although not sufficient) condition for a 'teleological' interpretation of an observed organizational phenomenon is the lack of path-dependency. As David puts it,

whether the focus falls upon the supposed evolutionary tendency toward efficiency in the development of property rights and other macro-institutional arrangements, or upon the conceptualization of a firm's internal organization and mode of doing business as the consequence of rational, optimizing decisions, the implicit presumption [is] that institutional arrangements are perfectly malleable . . . (David, 1992, p. 3).

David suggests at least four reasons why one should expect path-dependency in organizations and institutions. First, they incorporate shared conventions and mutually consistent expectations grounded

in 'shared historical experiences and conscious perceptions of the shared past' (David, 1992, p. 9). Second, they provide 'role-typing' and acculturation mechanisms which is a sort of 'sunk capital' of organizations (on this point, see also Douglas, 1986). Third, they embody 'codes' for communication and information processing (and it is precisely their irreversibility which make them useful: if a language could be frequently changed it would become worthless for communication with the others!). Fourth, the interrelatedness of different organizational functions— in terms of information processing, incentives, roles, etc. (see also above) — self-reinforces specific organizational structures, possibly well beyond the time of their purported usefulness.<sup>11</sup>

## 6. INCENTIVES VS. AUTHORITY VS. CAPABILITIES AS DETERMINANTS OF ORGANIZATIONAL BEHAVIOURS AND PERFORMANCES

The foregoing fundamental divides yield also different answers to basic questions such as why economic institutions ( and more specifically , formal organizations) other than markets exists , and what they do .As extensively discussed above, a good deal of contemporary theory start the interpretation of the nature of organizations, including economic organizations basing it on sophisticated, self-seeking, agents. Together, the behaviours of these self-interested actors are viewed as typically directed by market forces. Only in those settings in which, due to failures of information and contract incompleteness, markets are less effective in this task, are organizations called for to surrogate such imperfections. It is a story too familiar to be repeated here.

Conversely, a small—but not negligible and growing—minority of the economic profession has identified the (first approximation) 'primitives' of the analysis in the problem-solving features of economic organizations , in turn nested in ubiquitous forms of human 'bounded rationality', grossly imperfect processes of learning and diverse mechanisms of the social distribution of 'cognitive labour'. Needless to say, it is a perspective that finds seminal roots in the works of Herbert Simon, James March and indeed Richard Nelson and Sidney Winter.

Let us offer the following caricature to illustrate the differences between the two interpretative philosophies. Suppose that two delegations of intelligent but totally uninformed beings from Mars are sent to Earth with the mandate of reporting 'what business firms are'. The delegations are not allowed to visit the firms themselves. Rather, the first one is given to read, out of an enormous literature, say, Holmstrom and Tirole (1989) and Grossman and Hart (1986), while the second is given March and Simon (1958), Cyert and March (1963), Nelson and Winter (1982), and Marengo et al.(2000).

What would they report back to Mars? (We reasonably assume that these entities, given their empirical naïveté, are unable to catch all the caveats from footnotes, side remarks, etc.). Well, the first delegation would probably convey the idea that earthly firms are places where one confines vicious and cunning people who are made to play extremely sophisticated games according to rules designed in order to prevent them from doing much harm to themselves and to others. Only casual mention would be made—if at all—to conventional labels by which the outcomes are denominated ('steel', 'shoes', 'computers', and so on), while lengthy accounts would be devoted to the details of the admissible rules and the mathematical equipment humans utilize in order to figure out how to behave.

The second delegation is likely to return with a strikingly different story. It would probably begin with a rather long description of the impressive variety of 'things' that each day come out of earthly firms —i.e. precisely, steel, computers, polypropylene, etc.—and the equally impressive diversity in the processes leading to them. Moreover, these Martians would almost certainly remark that no one has the entire plan of what to do in their heads. Most of the members of each organization repeatedly undertake recognizably few operations, yet nevertheless organizations co-ordinate their tasks in ways generally yielding coherent artefacts at the end of the day. Indeed, this second delegation is likely to

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<sup>11</sup> David (1992) uses, appropriately, the analogy with technological relatedness, whereby technical interdependence within complex systems makes it hard to change any one component without affecting the whole structure.

suggest the analogy of a ‘firm’ with a messy but most often reliable computer program, with little mention of possible conflict of interests among the individual carriers of various ‘subroutines.’

Notwithstanding its being a caricature, the foregoing story does convey the spirit of an actual major divide cutting across current theorizing about organizations, having at the two extremes a pure incentive-governance view versus a pure problem-solving view.

Clearly, there are elements of truth in both perspectives (Coriat and Dosi, 1998): an ambitious research programme ahead entails indeed connecting the two. However, the starting point for such a bridge building has important consequences for the sort of bridge that one creates, as it embodies a commitment to some assumptions on first-order versus second-order effects. Forced to such a choice, we certainly pick the second *Weltanschauung* as a provisional point of departure (which also happens to be the least explored one). We do need just to assume a weak incentive compatibility to begin with (see Dosi and Marengo, 1995) in the loosest sense that there exists some pressure (economic or not) generating some connection between performance and rewards. (And not even that in all institutions: think of the army, where “being good” might imply a higher probability of ending up dead.) However, even having that, one precisely focuses (as a first theoretical approximation) on the diverse problem-solving characteristics of different organizations, and only in the second instance one tackles the ways in which incentive structures interact with problem-solving knowledge.

Putting it in another way, the archetype ‘incentive view’ fully censors any competence issue associated with what organizations do and how well they do it—except for issues of misrepresentations of ‘intrinsic’ individual abilities and adverse selection, or incentive misalignment in effort elicitation. As an extreme characterization, given the ‘right’ incentives, any firm can make microprocessors as well as Intel, or bioengineering as well as Genetech.

The second, ‘problem-solving’, archetype, on the contrary, censors precisely the incentive-alignment issue. In a sense, all agents are ‘angels’ as their motives are concerned. Conversely, it focuses on the problem-solving efficacy of what they do, especially in so far as what they do does not stem from any differential ‘ontological’ ability but rather from the social division of tasks and their combinatorics. So, in the first approximation of this latter view, the basic units of analysis are elementary physical acts, such as moving a piece of iron from one place to another, and straightforwardly understood as combinations of elementary acts, within a procedure, leading to a feasible outcome (an engine, a chemical compound, etc.).<sup>12</sup>

One can also describe it the other way round. Given all the problem-solving procedures leading to a given ‘outcome’ (e.g. an engine, etc., and, for that matter, a theorem, a statement about the purported structure of the observed world)—which might well be an infinite set—one may decompose them in subsequences of elementary acts of varying length that may be eventually performed according to various execution architectures (sequential, parallel, hierarchical, etc.).

At this level of analysis, an organization embodies problem solving in at least three senses. First, it displays the operational competencies associated with its actual problem-solving procedures [much in accordance with the routines discussed in Nelson and Winter (1982); see also Cohen et al. (1996)]. Secondly, the organizational structure - both the formal and informal ones - determines the distribution of informational inputs of the processing tasks and of the ‘allowable acts’ (i.e. ‘who can do what to whom’) and, as such, it determines all the decompositions of problem-solving procedures that are, so to speak, ‘legal’. Thirdly, it shapes the search heuristics for yet-unsolved problems - e.g. a new engine, a new chemical compound - that is, broadly unsolved problems - e.g. a new engine, a new chemical compound - that is, broadly speaking, the heuristics of innovative search.

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<sup>12</sup> See Marengo et al. (2000) for further discussion of this point.

## 7. SOME CONCLUSIONS AS AN INVITATION TO JOIN A LARGELY UNEXPLORED RESEARCH PROGRAMME

After the far-reaching insights of the Enlightened Founding Fathers of modern social sciences (also meaning inspired by the *Enlightenment*), most economists reverted to a new religion, possibly more dogmatic than the old one. It is time we go back to and try to rigorously operationalize the intuitions of such founding fathers as Smith, Marx, Dewey, Weber, Veblen, Commons, all the way to Hirschman, Simon, and a few others, recently rejuvenated by a generation of scholars featuring indeed Geoff Hodgson among the prominent ones.

The vast majority of economists have taken a route which interprets institutions using an efficiency criterion, founded on the principles of preference-based individual rationality (possibly suffering limitations that require second best institutions) and on equilibrium. Also evolutionary game-theoretic accounts of the emergence of institutions just relax the rationality hypothesis, but supplement it with an “as-if” account of collective rationality emerging out of the selection process. This resulted in a Panglossian approach which assumes that what exists must be efficient at least in the long term, even if it has always failed to prove that efficiency will indeed be the outcome of some reasonable evolutionary dynamics (as decisively shown by Winter, 1975). Indeed, the New Institutional Economics and Williamson’s Transaction Costs theory is not immune from such “Panglossianism” (as remarked by Granovetter, 1985; and Hodgson, 1991).

In such a perspective the market is the only fully efficient first-best institution. Actually, the market precedes all other institutions as a sort of state of nature<sup>13</sup>. Paradoxically this assumption has induced economists, including those embracing the New Institutional Economics perspective, to focus mainly on the problem of the “nature of the firm” – puzzled by its very existence! -, and, with much less emphasis, on the “nature of the other non-market institutions”, while entirely neglecting the problem of the “nature of market” (cf. Hodgson, 1988). If neoclassical economic theory has long suffered from a striking neglect of the institutional nature of firms, still today is mostly suffering from a perhaps even more astonishing neglect of the institutional nature of the market. Even Douglass North, points out this paradoxical state of affairs: “All the modern neoclassical literature discusses the firm as a substitute for the market [and] ignores a crucial fact of history: hierarchical organization forms and contractual arrangements in exchange pre-date the price making market’

In our view the major challenge ahead is develop and operationalize a rigorous theory of the nature and dynamics of institutions which departs from any (undemonstrated) postulate of efficiency and market centrality and addresses the coevolution of organizations, “forms of rationality”, preferences and technologies, i.e. precisely those elements that the neoclassical theory, but also a large part of the New Institutional Economics, consider as exogenously given “primitives”. An important corollary is the institutional embeddedness of techno-economic change. The standard view is that technology is exogenously determined and sets the constraints which organizations optimally adapt to (and even attempts to make it “endogenous”, rationalize it as the outcome of an optimal forward looking allocation of resources). Contrast this view with the alternative one, supported by vast empirical evidence, that these techno-economic changes are largely influenced by the institutional arrangements at all levels: national and international institutions, scientific and technological communities, organizational forms, work relations, etc. . The cumulative and path-dependent pattern of change shapes the set of possible trajectories, while the ubiquitous complementarities among institutions, technologies, values, norms determine a multiplicity of evolutionary paths. Institutions are “the carriers of history” (David, 1994), which well survive beyond any original “efficiency”, if they ever had one.

Last but not least, institutions shape and constrain the processes of self-organized coordination which socio-economic dynamics typically display. We have been beating enough the purported dead horses

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<sup>13</sup> “In the beginning, there were the markets” (Williamson, 1975, p. 20)



of decision-theoretic and game-theoretic interpretations. Rather, in multi-agents set-ups, coordination is typically the outcome of self-organizing processes stemming from the local interactions among agents. Kirman (2011) makes a general, very convincing, case to the point – from bees and ants all the way to markets in general and financial markets in particular - . The focus, in this perspective, and rightly so, is on the aggregate orderly properties of local interactions, with not too much attention on the background constraints. So, of course, it would be meaningless to start describing the fascinating self-organizing order in the flights of flocks of birds by their constraints . By the same token, however, at the opposite extreme it would be equally foolish to start the description of a camp of war prisoners or Sing Sing inmates focusing on their self-organizing patterns, even if there often are indeed also under the most constraining institutional structures ( Recall the tragic account of a nazi lager by Levi, 1959 ).

Most human institutions are placed in between the two foregoing extremes: the interpretative challenge is indeed to understand the varying balances between distributed agency, if any, on the one hand; hard institutional, typically hierarchical, constraining institutions, on the other (indeed major anthropological studies such as Malinowski, 1922; and Levi-Strauss, 1973, seems to suggest not much room for individual agency) and possibly their coupled dynamics, again when there is any .

We do believe that research in these directions would draw social sciences back to the “Enlightened Fathers” paradigm, and away from the dogmatic stalemate in which today they are largely confined.

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