Arbitral Functions and Constitutive Rules

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Abstract

It is nowadays widely recognized that constitutive rules play a key role in social ontology. Their definitional character is the primary source of the meaning of every rule-based activity, but what can ensure the persistence of this activity? The most common reply found in literature is to rely on social acceptance; even though this is certainly true, it is nonetheless not sufficient to explain what happens in breakdown situations, i.e. when by following constitutive rules institutions end up in an impasse. It is in a sense necessary to embed in the system something that would preserve it from destruction. Our claim is that for this purpose an arbitral function is needed. Intuitively, an arbitral function is a mechanism which is – at least partially – extra-contextual, that is introduced in a system to solve possible or actual impasses. This function may equally well be played by an intentional agent, or by an extra-contextual rule. Examples of the former case are: a referee in a football game, an arbitrator in a legal conflict, a judge exerting discretion in court; examples of the latter are: the toss in sport games, and the 50-move rule in chess. Our contribution then amounts to: introducing a novel concept, that of arbitral function; showing it is widespread in institutional reality; moreover, that it is essential in every institution. Finally, if constitutive rules determine that a certain activity counts as a valid element of an institution, arbitral functions are what ensures that this activity persists in being an element of that institution, by preventing possible impasses.

1 Introduction

In the wider domain of social ontology, the ontological analysis of organizations occupies a central place, and this is because of many reasons. Here we mention only two of them.

First of all, our social life, as human beings, is characterized by a continuous interaction with organizations, starting from the day we are born and the event of our birth is recorded by an employee of the registry office in some repository of data.

The second reason is that the analogy with the social (human) reality has been often used as a paradigm in technological applications to enable information systems to interact in a more effective way. Such systems are not only modeled as to behave *as if* embedded in structured organizations, most of the times they are actually part of organizations (both in the sense that they are owned by organizations and in the sense that they perform tasks in the organizations) and this forces them to respect some constraints descending on the features of such organizations, which then need to be seriously studied.

Generally speaking, in literature organizations are described as complex social entities that are created and sustained by human (or, in some cases, artificial) agents; a bit more specifically, an organization is a complex entity linked to a group of people that are thus able to constitute and regulate complex activities that otherwise could not be accomplished by non coordinated individuals.

Interestingly enough, both in analytic philosophy[1] (more specifically, in analytic ontology of social reality) and in computer science[2] (applied ontology and knowledge representation) studies organizations have been analyzed either focusing on their *conceptual* aspect – according to which they are considered as goal-directed and composed by roles that are structured following a certain design – or on their *concrete* aspect – which involves persons, computers, production means, buildings etc.

In previous works[3] we have tried to present an ontological analysis that keeps together the two levels.

But even when this step is performed, still there is something lacking for account of organizations to be more comprehensive, namely the analysis of its decisional system, which is a central element to distinguish organizations from other forms of collectivity which are not *organized* in a strict sense of the term.

The starting point of the present paper is that a novel concept is needed

[1] [Scott, 2001], [Ladd, 1970], [Tuomela, 2002], [Miller, 2008].

[2] [van der Torre et al., 2004], [Pacheco and Carmo, 2003], [Giret and Botti, 2004], [Fox et al., 1998], [Dignum, 2004], [Boella and van der Torre, 2004].

[3] [Masolo et al., 2004], [Masolo et al., 2005],[Bottazzi et al., 2006], and especially [Bottazzi and Ferrario, 2008] and [Bottazzi et al., 2007].

in order to understand how such decisional system works, namely that of arbitral function.

The paper is thus structured as follows: in section 2 we briefly introduce the concept of arbitral function providing some general and intuitive characterizations, in section 3 we try to substantiate these hints through the use of some simple examples taken both from the domain of games, like football and chess, and institutions, like public selections and organizational decisions. Section 4 is the core of the paper and is dedicated to a detailed analysis of the notion of arbitral function, carried out also by comparing it with similar but different notions; finally, section 5 traces the way for future development of the work by showing how the introduction of this novel notion may influence the study of some particular aspects of organizations.

2 Arbitral Functions

Let's start with a rough definition of what we mean by "arbitral function", or "resolutive function". Intuitively, an arbitral function is a mechanism that, given a certain regulated system, allows to overcome situations of impasse thanks to elements that are partially extra-contextual with respect to the system itself. In a sense, this function is necessary in order for the system to persist by providing a way out from impasses that can either be intrinsic to the functioning of the system or be a consequence of its interaction with the external environment.

The choice of calling such a function "arbitral" and not "arbitrary" is aimed at underlining its main feature, that is its role in allowing the functioning of the system while being in a certain sense external to it, like (as we will see in more details in the sequel) the referee who allows the game to be played and to proceed in some sense from outside. There are many cases in which the arbitral function also displays a strong character of arbitrariness (for example when we leave it to chance to decide in an impasse situation by tossing a coin), but these cases do not exhaust the range of things that can play the role of arbitral function.

Much more essential to be qualified as an arbitral function is that its resolutive power comes from its non pertinence (at least in a strict sense) to the context it should be an arbitral function of. If we look at the social context of reference, the arbitral function is a power, a particular form of social power that allows a regulated interaction to proceed.

Such arbitral function can be performed equally well by an intentional agent, with a decisional attitude or by a rule, which can be part of an abstract decisional system. This connection with the decisional stance has an important consequence in all those cases in which the arbitral function is executed by an intentional agent: it is connected with the notion of autonomy; such an agent is autonomous – up to a certain degree – with respect

to the decisional process which is necessary to overcome the impasse and restart the system.

So far, we have generally talked about "systems"; this has been done on purpose, since, as we will show in the next section, arbitral functions work in very similar ways in games, in organizational structures and in regulated real life situations, as those can all be considered as instances of institutional settings.

3 Some Examples

3.1 Football

We can now try to give some specific example that will help to better clarify the issue. Some of these examples will be relative to the domain of games and others taken from institutional reality.

Let's start with the case of a referee in a football game: her duty is mainly that of seeing to it that the rules of the game are respected throughout the whole match that she's directing.

But her duties are not limited to guaranteeing fair play or to aspects connected to monitoring and sanctions, this is not sufficient to completely explain what a referee is, there is something more to it, a sort of deeper and more primary function, relative to the sense of being the referee with respect to the sense of the game.

In order to grasp this deep sense, we need to recall the notion of constitutive rule, as explained by Searle, as that of a rule which contributes to confer sense to the game or the institution it is a rule of. According to this reading, when we say that a referee has among her duties that of seeing to it that the rules of the football game are respected, this also amounts to monitoring that the constitutive rules of the game are respected, in other words that the relevant actions executed on the football pitch are "meaningful". The referee should guarantee that the play does not halt and that it does not cease to be an instance of that game (in this case football). Actions that go against this "deep" sense of the game – that constitutive rules contribute to build – are actions that *destroy* the game, that make that activity something different, no more a football game.

If one player (other than the goalkeeper) touches the ball with his hands, the referee blows the whistle for a foul, the game stops but then it can restart; but if all players use their hands, the (potential) spectators cannot understand what's happening anymore and the meaning of the game is lost. There is no more an agreed upon constitutive rule that allows to decipher that activity, and the latter cannot be interpreted as a football match anymore (see [Smith, 2007]).

Here there is an important point to specify: "to halt" the play is not the same thing as "to interrupt" it: an interrupted match is still something

endowed with a sense, a sense that can be deciphered exactly because the interruption is one of the possibilities admitted by the game. This shows that the seeing to it that the rules are respected, proper of the referee, is something more than the mere seeing to it that the play be fair and this is because a match which is halted becomes something different, a non-match.

The referee is in a sense extra-contextual: she doesn't participate in the game in the same sense as the players do, but her presence is necessary, as just shown. She is partially outside the game or, better, she is inside and outside at the same time: she is inside because being the referee is not the same as being a spectator, but she is also outside because to observe the game and intervene to preserve its sense it's not the same thing as participating to it as a player.

The referee does not play the game in a strong sense: we can still imagine a match played by extremely fair players, where each player has a kind of inner impartial referee[4], but it's much more difficult to figure out a match which is only played by the referee.

To sum up, the deep function of the referee can be seen as composed by two basic elements: to be in charge of avoiding that the play halts and to be partially outside the play.

Sticking to the ambit of the football game, the toss at the start of the game has a function which bears some similarities with that of the referee: the toss is not part of the game as the offside rule is, but it is necessary in order to exit the situation of initial impasse, by assigning the kickoff to one team or the other.

An analogue thing can be said about the rule to decide which team kicks the first penalty in the final phase of a match that cannot end in a draw (like a final of the world championship).

These two rules are necessary to restart the game in a breakdown situation and both are responses to a specific problem: how can we start the game or start a new resolutive phase of the game (that of the penalties) in a situation of perfect parity? In both cases we have the essential elements to describe these rules as arbitral functions:

a) the game could not proceed by following all the rules of a football game – except the two just mentioned – and we would end up in a breakdown situation;

b) they introduce a behavior that in some sense is outside the reference context: intuitively it is difficult to claim that the toss of a coin is football in the same way as an assist to score a goal is.

[4]Probably such a match would not be considered valid according to the criteria of most national federations, but it is still a football match under many respects, differently from a match where the players use their hands.

So, in the case of the football game we have that an intentional agent and some rules play an arbitral function within the reference system; obviously, they don't have the same arbitral function and in fact they allow to exit the breakdown situation in two different ways: by relying on chance (the coin) or on the authority to make the rule be respected (the referee).

3.2 Chess

A different kind of game that can equally well provide examples of arbitral functions is chess.

Take for example the 50 moves rule: a match ends in a draw if the last 50 consecutive moves have been made by each player without the movement of any pawn and without the capture of any piece.

The principle that allows to solve the impasse is not strictly intrinsic to the game – if by "intrinsic" we mean that it employs only its allowed moves – it intervenes from outside to avoid that the game goes on indefinitely, by assigning to a certain state of affairs the condition of "draw".

A similar situation occurs with stalemate: the player who must make the move can move neither the king – even when this is not in check – nor the other pieces. The arbitral function anyway imposes that a "valid" state is nevertheless reached – the draw in this case.

These two situations could equally well be transformed in a victory (or in a loss) of the player performing the 50^{th} move or of the one reaching the stalemate[5], the essential point being that when the game reaches an anomalous state that tends to destroy the sense of the game, this must be recovered by going in a state which is "in the spirit" of the reference context, but is reached by means that are partially extrinsic with respect to the context itself.

3.3 Institutional Settings

The previous examples, though explanatory enough, can convey the wrong impression that arbitral functions find a place only in games while, more importantly, they can be observed at work in institutional settings.

Take for example a competition to be hired in a public administration; for the sake of simplicity we can imagine that only two candidates apply to the only available position and that, by chance, it happens that the two candidates qualify exactly at the same degree in meeting the required criteria. Such would become a breakdown situation and the sense of having advertised the competition would be completely lost in case we wouldn't have a rule allowing the competition to reach anyway an end, for instance

[5] In the past, some variants of the game used to assign the victory to the player who had caused the stalemate, some the other way round (see [Murray, 1913]).

the rule that, everything equal, assigns the position to the younger (or older) candidate.

Even in this case, the fact of being younger or older is not strictly related with the core of the competition and thus we have the fundamental features of arbitral functions: capability of solving the impasse and externality.

Another enlightening example is one that's very famous in the philosophical literature, that was firstly proposed and analyzed by Philip Petitt in [Pettit, 2001b], a problem of judgment aggregation, that has been named "discursive dilemma". The dilemma is relative to a decision that has to be taken on the basis of the opinions of a number of agents who have to express a majority voting on a certain set of problems, which are logically connected. Petitt has shown with mathematical means in [List and Pettit, 2002] and[List and Pettit, 2004] that it is always possible that, though each agent gives her own opinion coherently, an incoherent majority is nonetheless generated.

Let's suppose to have a group composed by three agents A, B, and C that should express their opinions on each of the following points:

- **First Premise**: "increase expenses for defense"
- **Second Premise**: "increase other expenses"
- **Conclusion**: "increase taxes"

Let's further suppose that it is not possible to increase all expenses (by voting yes to both premises) without also increasing taxes (without also voting yes to the conclusion)[6].

Agents vote and the results are as in the table 1.

Table 1: *Expenses and taxes.*

	Subjects of voting			
Voters	"Defense"	"Other expenses	"Taxes"	
A.	Yes	No	No	Coherent
B.	No	Yes	No	Coherent
C.	Yes	Yes	Yes	Coherent
Result	Yes	Yes	No	Incoherent

Votes that are individually coherent generate a contradiction. It is not possible to vote "Yes" to both premises and "No" to the conclusion; even though voters respect such a rule, the result of the majority voting is not to increase taxes ("No" to the conclusion) and, at the same time, increase

[6]Logically, this is expressed by the formula $R \iff P \wedge Q$, where we cannot have P and Q true and R false at the same time.

expenses for defense ("Yes" to the first premise) and the other expenses ("Yes" to the second premise). But this, as already noted, ends up in a contradiction. The problem is that every method for voting which treats equally every point and every voter has been shown to suffer from this contradiction. The consequence is that it is not always possible to generate from the sum of all single opinions a unitary vision, which is necessary for the organization to be an authentic subject. In a sense, there is a form of democratic voting that, for its very nature, brings to a situation of impasse. It seems that what is lacking is a procedure, a norm able to coherently aggregate the wills of the single individuals.

In literature various different solutions have been proposed to overcome such impasse.

- a *premise-based procedure*, which consists in making everyone publicly vote only on each premise, but not on the conclusion, so that it is possible to vote positively for the conclusion only if the majority has voted positively also for both premises, [Pettit, 2001a];
- *conclusion-based procedure*, which consists in having the agents thinking privately about their own opinion on the premises, inferring, still privately, the conclusion from the premises, and then publicly voting only for the conclusion[7], [Pettit, 2001a];
- *belief merging procedure* through techniques imported from artificial intelligence, in case of incoherent results it aggregates votes as to come to outcomes that are second bests but free from contradiction, [Pigozzi, 2006];
- *straw vote* on each point, by discussing collectively to find a solution to each contradiction, [List and Pettit, 2005] and [Pettit, 2008].

Without entering into the details of each single solution, the idea is that the discursive dilemma is another case in which by following the rules (in this case of democratic majority voting), we end up with an impasse that calls for a solution imposed "from outside", an arbitral function, as we would claim.

[7]It is interesting to notice that not all instances of discursive dilemma can be solved with the conclusion-based procedure, as it is in the present case, which does not allow to then decide on the premises (having decided to increase the taxes does not suggest anything on what to do then with the various expenses). This means that the criterion to choose between premise-based and conclusion-based procedures is strictly dependent on the particular dilemma for which the agents are voting.

4 Constitutive Rules and the "Sense" of an Institution

The examples presented in the previous section were aimed at illustrating in a simple way how arbitral functions are characterized and the role they play in different settings and this was a necessary step in order to approach the core of this work, to which we turn now.

We characterized arbitral functions as mechanisms that are partly inside and partly outside the game/institution. These two ambits are not so far apart as it may seems at a first glance and in fact many scholars have drawn parallelisms between them.

The notion of game is very popular in philosophical studies, at least since the work of Wittgenstein. This notion is a very complex one, and its thorough analysis exceeds the limited scope of this paper, but we will only use it in a loose sense that we can intuitively characterize. The kinds of games we are interested in are those that are regulated (differently from games like throwing a ball against a wall), that involve multiple players (games like solitaires are thus excluded), that are competitive (like chess) or partially collaborative (like football).

The usefulness of talking about games descends from the similarities they share with other more complex institutional activities, like markets, or the institutional life of a State, like Italy[8].

In order to understand how arbitral functions interact with a system of constitutive rules, it is necessary to rely on a notion of "spirit of the game", or "sense of the game" that would allow a better comprehension of the idea of "primary context" of an institutionalized activity, where the arbitral function is a sort of *deus ex machina* that makes it possible for the game or the institution to overcome impasses that it may eventually encounter.

If by "spirit of the game", or "sense of the game", we mean the core which is made explicit by the set of binding and essential rules, we can notice a significant analogy with the notion of cognitive (as opposed to metaphysic and linguistic) context, as a background theory composed by a language, a set of axioms and a set of inference rules, a notion that has bee used (in some variants) in philosophy ([Perry, 1986], [Recanati, 2001]) and in the artificial intelligence literature ([Giunchiglia and Ghidini, 2001], [McCarthy, 1993]). The analogy between these two notions is given by their definitional character: the rules that constitute the spirit of the game give a definition of what the game is and, in a sense, allow to interpret certain actions as moves in the game; similarly, the language, axioms and rules of a context define what is true or valid in that context and constrain the interpretation of certain facts within the context.

But what are these rules we are talking about?

[8]Like it has been shown in [Searle, 1995], [Marmor, 2006] and [Smith, 2007].

John Searle in [Searle, 1995] distinguishes between what he calls "regulative rules" and "constitutive rules". The former are rules like "drive on the right side of the road" and they regulate an already existing behavior (driving in this case), while the latter in a certain sense *create* new behaviors. The fundamental structure of constitutive rules is the famous "count as locution": X counts as Y in a context C. They have a definitional character, as they completely specify new behaviors and can also create new social objects, like in Searle's example about money: the bills (X) printed at the mint count as money (Y) in a certain State (C).

If at the opening a player moves one of her pawns of three positions (instead of one or two, as the rules of opening prescribe), the latter is maybe playing some game, but not chess. Constitutive rules determine a certain game or, better, a certain kind of social reality and, if they are not followed, such reality ceases to exist. On the other hand, with regulative rules, the violation stays in the logical space of behavior that the rule establishes and according to this it is judged: a bad strategy ending up in a loss means to play badly, but is nonetheless playing.

To break a constitutive rule has completely different consequences: it means going outside the logical space of the activity under examination: to move the pawn of three positions is not to play badly, it is not to play at all. The *sense* of playing chess is given by the constitutive rules that define the possible moves for each piece. To understand what a pawn is in the chess game we must look at its constitutive rules: a pawn is something that can move in this way or this other way, can capture this way or this other way and so on.

If constitutive rules give an essential contribution to determine the sense of the game, how can we isolate such sense so that we can say that there is a main and a secondary context in which arbitral functions operate? What makes us say that tossing a coin in a football game or the stalemate in chess are outside the essential nucleus of the game and are part of a secondary sense of the game, even if they play a fundamental role inside the game itself? To answer this question is extremely difficult, and we won't try to give a response here.

Our claim is that the constitutive rules that have a regulative function, when they are "added" to the primary context, have an arbitral function. As suggested by Colin Wight in [Wight, 2006], all constitutive rules also play a regulative function. What we can add to this is that such regulative function is straightened: the behavior they apply to is logically pre-existing, they regulate it and thus they guarantee the perduring and the sense of the activity that the proper rules, specific of the game, describe. Thus, we could call them "regulative-constitutive".

The case of intentional agents is slightly different, but can be re-conducted to the previous one: there is a sense in which we can describe all arbitral functions as rules. For instance, we could say that it is a rule that in the

context of a dispute we let a third party decide to solve it if this third party participates to the event of the dispute only in a weak sense (and not in a strong sense as the two contending parties). We can say that the agent solving the dispute with her decision is displaying an arbitral function.

It is not easy to clarify what we mean by main and secondary context and by "adding" a rule. In [Masolo et al., 2004] the authors distinguish two relations that can hold between a concept and a description (or a context, in our case): a concept can be *defined* in a description or *used* by a description which is different from the one in which it has been defined. If we take the toss of the coin in the football example, it is something which is defined in a different description or system of rules with respect to the system within which the rules on how the ball can be touched are defined. In the latter system the toss of the coin is just recalled, *used*. It is in this sense that the arbitral function performs a comparison between contexts, showing how a certain institution relies on other external institutions to allow the performance of the activities that are under its control.

In other words, what happens is that inside the main context, we find rules, that we could call "bridge rules" that work as a link with a secondary context; they are a sort of pointer to rules that are originally defined in a different context, as happens with the regulation of football, that includes a rule that singles out a problematic situation and points to another regulation (that of coins tossing) where a solution has to be found. In this case, the arbitral function is played by the part imported from the external context (the regulation for tossing coins).

They are constitutive rules that are partially external with respect to the reference system and have a regulative function enabling them to solve potential impasse situations and are a peculiar sort of "rules on rules", what H. L. A. Hart calls "secondary rules"[9].

The distinction between primary and secondary rules traced by Hart is orthogonal with respect to that between constitutive and regulative rules and it can contribute to understand the notion of arbitral function. Primary rules impose duties and obligations and directly guide the behavior not only by specifying what must (or must not) be done, but also through possible sanctions (or rewards) associated with the respect or violation of that imposed behavior. The penal code, that forbids to steal and to kill is composed by primary rules, but these are not sufficient to have an institution like the juridical system of a State. For this it is necessary a further level of rules allowing the system to be judged and be recognized as valid. This is what secondary rules do, they establish how rules are issued, recognized, modified or extinguished. They confer powers, and apply on other rules, as in the case of those that establish how to formulate contracts, or like rules of the

[9]See [Hart, 1994]. For an analysis of this important notion and its relation with problems in social ontology see [Smith and Zaibert, 2007].

Constitution, that establish how a Parliament is composed and how it can take some decisions in certain ambits.

Also bridge rules are secondary rules: they link two institutions through a statement structured this way: "in controversial cases, or in impasse situations, let's refer to this rule or this set of rules".

If we accept the hypothesis that constitutive-regulative rules are not the only ones to have an arbitrary function, but this function is ascribable also to intentional agents, then these secondary bridge rules are also present in this case and they link the agent to a system of rules: "in an impasse situation, let's refer to X". On the other hand, to this intentional agent are ascribed all the powers described in a system of constitutive rules, that specify which kinds of actions are valid within certain given contexts. It is still necessary to have a system of constitutive rules, i.e. an institution that declares *who* can exert the arbitral function. This means that even with this kind of arbitral function there is an association between different institutional contexts, but these pass through the process of singling out a certain agent X who can save the sense of that institutional activity; the task of keeping stable the association between such X, the description in which X is defined and the system in which X exerts her arbitral function is in charge of the bridge rules.

What just said about the relation between constitutive rules and arbitral functions allows us to distinguish the latter notion from other, otherwise fairly similar, notions. The first notion we want to compare it with is that of convention, to which the philosopher David Lewis gave a classical formulation in [Lewis, 1969].

The basic idea is that conventions are the result of a common interest that is expressed by each individual of a group or community as to regulate her behavior according to certain norms; according to this view, substantially, conventions solve coordination problems.

A coordination problem emerges when we have multiple agents with different preferences related to their reciprocal behaviors and they are in a situation such that, among all possible behaviors, they prefer to act in accordance with others, rather than otherwise. Lewis avoids to rely on explicit agreements (like Quine does) and concentrates on interdependences among decisions, that can be solved through equilibria, when the coincidence of interests of agents is prominent.

A very elementary example of coordination problem is the one of driving. Imagine to have two drivers coming from opposite directions and they happen to be one in the way of the other in a narrow street. In order to be able to pass they are obliged to turn the wheel, but if both turn on the right or both on the left they don't collide, otherwise, if one turns on the right and the other on the left, they crash; this very classic example can be expressed in a game-theory-like matrix, in terms of pay-offs:

	right	left
right	$10, 10$	$-10, -10$
left	$-10, -10$	$10, 10$

In this case two solutions (combinations of decisions of the two drivers) are favorable to everyone and two unfavorable. The former two are called "equilibria", more precisely "Nash equilibria". This situation is usually solved by relying on a convention, to keep both the right side if driving in Italy or Germany and to keep both the left if driving in England or Australia.

It may seem that what the convention does in this case is exactly the same as what arbitral functions do, but we can point to some relevant differences. First of all, the absence of a convention does not necessarily ends up with an impasse: we can imagine that the two make the "right choice" by chance. And, secondly, even if we can imagine that they stop one in front of the other not knowing what to do and being thus halted in an impasse, there is an important difference with the impasse that arbitral functions are in charge of solving. While the latter is caused by the application of the rules of the institution, the former is on the contrary due to the lack of a rule, for example of the convention to drive on the right. We could call this impasse, that does not necessarily apply to rules, *strategic*.

But there is another important difference: the fact to have at least two equilibria captures the nature of *arbitrariness* typical of conventions, such that the convention establishes that one should act in a certain way, but it would be equally possible and effective to act in another way. On the contrary, for arbitral functions, it is possible to think about a situation where there is a unique rule or a unique agent that can unblock the game and there are no other conceivable alternatives. The entity that exerts the arbitral function does not loose its extra-contextual character nor its unblocking capability. This does not mean that arbitral functions cannot rely on conventions to be exerted, but rather that they are not logically characterized by substitutivity, as conventions are.

A further relevant difference is related to the distinction regulative/constitutive: the nature of conventions seems to be eminently regulative — given a certain pre-existing activity, among the various possible solutions, a certain equilibrium is chosen (for instance by following a salience criterion). Thus, conventions *à la* Lewis are not completely able to clarify the constitutive aspect of rules, that is so important for arbitral functions.

This difference is something that Andrei Marmor has also evidenced:

> It would be perplexing to claim that playing by the rules of chess solves a coordination problem between the players; as if there had been a coordination problem between potential chess players before chess was invented, as it were, and now they play by the rules to solve that problem.
>
> [Marmor, 2007]

Let's go back one step and re-consider the notion of impasse. If strategic impasse, typical of conventions, is not what is at stake when we call arbitral functions into play, how can we characterize a different notion of impasse?

First of all, the impasse that arbitral functions are supposed to solve is one that has a different effect on the institutional activity that it halts. The rule or the agent that exerts the arbitral function must *necessarily* unblock the situation of impasse, otherwise the activity it should solve looses its sense. If a rule like that of stalemate in a chess match could not intervene, not only the match would be blocked, but it would not be a chess match anymore, since a chess match is *constitutively* deemed to terminate with one of these three options: draw, victory of the white, victory of the black.

Thus, the two functions, that of conventions and the arbitral are different also from the point of view of the impasses they are supposed to solve, strategic in one case and *constitutive* in the other[10].

A last possible analogy is with a notion taken from game theory, that of *correlated equilibrium* as illustrated by Robert Aumann (see [Aumann, 1974]), an equilibrium that can be reached only in presence of communication between the agents trying to coordinate and often thanks to the help of a mediator, a figure that suggests each time to each agent the strategy to use in order to enhance the advantages resulting from the interaction.

In this Aumann equilibrium agents are neither obliged to coordinate, nor to follow the mediator's suggestions, rather they take advantage from their agreement in order to maximize their own utility. This does not hold for arbitral functions, where there is a system of constitutive rules that allows the prosecution of an activity managed by another system of constitutive rules: the agents, if they want to go on performing such activity *must* follow what is established by the institution the arbitral function comes from, otherwise the activity looses its sense and they end up by being completely outside it. Furthermore, differently than with coordination situations, it is not always true that agents who follow the arbitral function take advantage

[10]We cannot avoid to notice that the goal of Lewis' research is language and thus meaning, but in his case it moves from a regulative dimension. This leads us to think that there is a point where regulative and constitutive dimensions could meet, even though the route to the singling out of that point seems still to have to be explored in social ontology; at this regard see [Marmor, 2007].

from it: for example, it may be the case that a rule that exerts an arbitral function prescribes the exit of one or more participants from the activity, or a sanction.

This highlights the two completely different perspectives from which the activity is observed in its constitutive sense; for arbitral functions what counts is not the point of view of the players of the game/institution, but that of the game itself. What is necessary is to save the game, independently from the utility that the solution has for the players.

5 Concluding Remarks and Future Issues

Organizations are complex entities that live in an indeterministic environment, so the probabilities to encounter impasse situations are definitely very high. As a consequence, we could claim that arbitral functions are a characterizing element of most of them – if not all.

This is the first reason why we believe it is worth to follow the lines of analysis that are sketched in this paper.

We can also envision some applications of the concept of arbitral function towards the resolution of some typical puzzles, as for example the distinction between organizations and simple teams; we could see teams as collections of agents that just execute a plan which is conceived to achieve a common goal, they just coordinate with each other, following certain rules. We could hypothesize that, when they are faced with an impasse situation, if they overcome it by recurring to an arbitral function, in some sense they become an organization, which is an entity endowed with a higher degree of autonomy, given by the fact that it could continually choose how to modify certain rules to accommodate problematic situations. For the moment this is just a working hypothesis, but it looks promising.

If we accept what just said, we can characterize organizations as modular systems of rules, composed by three modules, each one formed by a set of rules, one included in the other. So we can think the first more comprehensive module as the structure of the organization, composed by the sub-organizations and roles that constitute it, with all the relative interaction rules; inside it we can find the decisional system, which collects all the rules that regulate the decision procedures and, finally, the most internal module, the one with the set of rules exerting the arbitral function. Even if most decision mechanisms are planned, they are continually adapted "on-the-fly" through new decisions ([Tuomela, 1995],[Coleman, 1990]).

In fact, among the considered examples, like those of games and other institutions, the peculiarity of organizations resides in their dynamic features ([French, 1979, French, 1984], [Scott, 2001]), i.e. their being an execution of a system of rules, decisional rules that, being collective, need to be regulated by secondary rules that are at the same time coordinative and constitutive:

they manage the distribution of power in a collective entity and contribute to build the sense of the organizations themselves.

These insights are very evident in the example quoted above of the discursive dilemma: the fact that many researchers are still trying to find better solutions to it shows how important solving impasses is in organizational settings and, in fact, the proposed solutions can be interpreted as arbitral functions. Along these lines, a final important remark is that the evaluation of the appropriateness of the proposed solutions is conducted on the basis of their respect of the "spirit of the game", a game that, in the mentioned example, as well as in many (obviously not all) organizations, is democracy.

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