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Counselling: Decision Making, Consensus, and Mediation

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Abstract

We analyze three fundamental configurations in practicing counselling in order to help the autonomous capabilities of an individual to make decisions about his/her own choices, and to help individuals with different conflicting interests or diverging opinions to mediate situations and reaching consensus. The method followed is an approach based on an interdisciplinary collaboration of a group of experts, respectively, on decisional logic, consensus reaching procedures, and mediation strategies. The idea is that the interconnection among these experiences can have many applications in practicing with incisiveness counselling, mediation, and consensus. The originality of the study consists into considering the \textit{Ars Maieutica} of the Counsellor in the direction of the interlocutor in a “unitary logic” of “Decision Making - Mediation Task- Consensus Reaching”, and based on a reciprocal interaction and strategic behaviour. Moreover, an original formalization of the practice of counselling, mediation strategies, and consensus procedures, based on mathematical multiobjective and multiperson decision making and game theories is considered. Fuzzy extensions are sketched.

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1. Setting the problem and objectives of the research

The aim of counselling practice is twofold: either to help a person to develop own proper abilities and attitudes to autonomously decide his/her actions (decision making problem), and to mediate unease situations among individuals (mediation and consensus problems). The final goal is reaching wellness.

Especially, we will go deeply into mediation between two individuals and consensus reaching in a committee charged to make decisions, while we will develop a model of procedures of counselling.

We do not want, at present, to deal with a sharp distinction between the two aspects. From a formal point of view, mediation can be mainly seen as a procedure to define and solve a competitive game, while consensus as a search for a cooperation satisfying at least a majority.

Our adopted method is an interdisciplinary cooperation among experts in various branches, such as sociologists and mathematicians that coordinate their specificities and attitudes for comprehension of problems and challenging with the capability of formalizing and building relevant theoretical models.

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2. Counselling and decision theory

For sake of simplicity let us call client the person that has to be oriented by the Counsellor to make his/her decisions. The task of the Counsellor is to facilitate in such a way that the client found his/her decisions and consequent actions on a coherent and realistic vision of his/her wishes, tools, constraints, and possibilities; then his/her evaluation of the situation with consequent expectations, perspectives of the possible alternatives, i.e. how actions are tied with wishes. The Counsellor, using Ars Maieutica, and establishing with the interlocutor a relation that allows to attune his techniques to the emotional framework and the cognitive objectives of the client, has to get that the client himself builds his/her answers and decides the own proper social actions.

A crucial help may be obtained by formalizing the situation in terms of decision theory. Formalization should be understood “as needed” and anyway it should be a light, an ideal target, a far reference point, that gives the client the logic framework of his/her thoughts, in order that he/she avoids dispersions, incoherencies between wishes and effects of his/her actions.

The client must be oriented to be aware of his/her objectives, the subjective value of each objective, the possible action or behaviour alternatives. Of course, a complete clarification of the objectives or a complete knowledge of the alternatives is neither possible, nor desirable; indeed, an excess of detail increases the complexity and loses sight of main logical thread. Nevertheless a “divergent phase” is necessary, that leads the client to enlarging the fan of the objectives and alternatives, that starts from an analysis within oneself and outside in the social environment.

Fuzzy reasoning and arithmetic may help. This permits a gradual procedure in the changes of points of view, gradual and dynamical attribution of the degrees of importance to the objectives, management of semantic and emotional uncertainty.

The help of decision theory, in the construction of the frame of the expectations consequent to each action, is important. The person to be oriented must be aware of what he/she gets, or the frame of the possible outcomes related with any alternative and each his/her objective. Decision theory helps to collect these data in order that the subject be oriented toward the actions that are more coherent with his/her actions.

Decisions may develop in certainty conditions or randomly. In other words an action may give rise to just one or several possible consequences. The counsellor must help the client to find out the possible consequences of his/her actions and set choice criteria neither too optimist, nor too pessimist. To this aim, a crucial help is given by subjective probability (de Finetti, 1970), based on the coherence of the opinions. In fact, subjective probability allows to assess a coherent probability distribution to the outcomes of an action.

Furthermore, the consequences of an action cannot be, in general, defined in a sharp way; rather it is opportune that the client does not renounce his/her doubts in favour of a choice that is rash, premature and of doubtful effectiveness. From this point of view, fuzzy logic and linguistic variables may be effective, in that they are expressed as imprecise numbers, but plastic and gradually modifiable numbers as far as the opinions of the client become clear (Zadeh, 1975a, 1975b, 1975c; Klir and Yuan, 1995).

The fuzzy extension of the decision theory is able to gather the various elements and shows a clear framework, in a language that is close to the human language, of the path that goes from the awareness of the own proper expectations to the coherent action.

3. Mediation and game theory

Given two parties in conflict, mediation is a procedure, or a situation in which a person external to the conflict, the mediator, is called to intervene with the task to solve the conflict, - that provokes malaise in both parties. The mediator does not take sides in favour of any party.

With the aim to win back the wellbeing and find a conciliating solution for their problems, the two parties agree about the intervention of a third subject, the mediator. He pursues a series of actions to move close again the parties in order that they find a solution for their problems.

Let us adopt the language of game theory and call players the two parties. The conflict between the two parties may be assimilated to a two-person game, in which, however, the frame of knowledge and expectations is dynamic; it varies in function of the activity of the mediator.
The first phase of the intervention of the mediator consists in setting-up three activities or sub-phases: the pre-engagement of the parties, the reconstruction of the state of fact of the conflict and the evaluation of the state of law. See, e.g., (Moore, 1986; Berger, 1998; Robinette, 2000; Luison, 2000; Nanetti, 2003).

The pre-engagement of the parties means acceptance of the general criteria from the two players. In other words, at pre-engagement the individuals in conflict declare their willingness to accept, in principle, some general criteria, before starting to examine the actual case.

These general principles are basic criteria to find the accord. It is necessary to accept them in an initial phase, abstract and aseptic, because each player, when his particular case is involved, search also for departures from or exceptions to general principles, that he would accept in a cold phase. Because of this a preliminary engagement is needed.

Therefore general criteria to solve a particular case must be tuned by the mediator that makes the players assume a pre-engagement, preferably separately. Indeed, at beginning the mediator does not gather the parties in contrast between them, but hear them separately.

More then the pre-engagement a further initial activity in the first phase is to accept the fact state and the law state of the conflict.

A car accident is a valid example: the mediator may let the parties assume the pre-engagement that who comes from right always has the right of way, - unless a contrary indication is signaled -, and he lets it record as a starting element for the following phases. In general, if established rules hold, regulations in force, such as the rules of the road, these are included in the pre-engagement. In other cases there are not defined rules, there are socially shared intuitive formulas of what is right. When this occurs, the mediator makes the parties enunciate and subscribe the formulas.

The other two activities of the first phase are the definition of the fact state and law state. The fact state is the story, logically and empirically valid, how matter ran that produced the conflict. We know that a person reconstructs the dynamics of the events in a subjective way. When a conflict arises because of a car accident, each party offers a different version. Then the mediator, in a first phase let each player tell his own point of view. The fact state is just the story of the data like it is presented by each party. Mediator has to get coherent, non-contradictory, stories.

To this aim he lets each player, separately, tells many times his version of the facts, editing it with some elements of logics, taking care of coherence with the already accepted general principles, remarking the empirical elements that do not work, asking for further details. Each player must be satisfied by the empirical and logical setting-up of the story from his own point of view.

The law state lies at another level: given the facts like the parties reconstruct and interpret them, why, in virtue of which right, each party assumes to be right? The law state is the set of the motivations and reasons that each party produces to have a claim, also appealing to the rules and principles accepted in the social customs, and rights codified by the laws.

In the sub-phase of the state of fact, the two players, separately listened by the mediator, will have two different versions of the report of the facts, but also in the further activity, that is the law state, several differences between the two parties will be. Indeed, each player will have reasons based not on defined norms, such as regulations, laws, codes, but equity, justice, education, moral sense opinions for which he thinks to make claims. For instance, he is elder, or worker for a longer time, or more needy, or above in rank, etc.

Mediator has to be a neutral arbitrator; he has never to make up a player's mind, never to declare any preference for a party, mainly at beginning, but also at the end. He has to be an ease maker, not a directive. The difference between directive and an ease maker is that the directive imposes his line, while the ease maker maietically allows that the others let come out their ideas and the premises that lead to an agreement. Indeed, the ease maker lets the pre-engagement come from the parties, i.e., the general criteria that are the ground on which a conflict solution can be found. Later, the (ease maker) mediator let the players tell, maietically, the report of the facts like they think them happened. Finally, the mediator let the law state that each player had a claim, come out. In this case policemen would interpret and say them the right, whereas the mediator let the interested person maietically, say on which point of view he thinks to found his reasons to claim rights and pretensions.

When this first phase, made by three sub-sequences, is completed, the mediator begins a second one and then a third, each divided in several activities and sub-phases. The second phase, called the divergent phase, consists in the fanning out exploration of all the alternatives that any player proposes as solution of the controversy. The third phase, called the convergent phase, consists in the choice of the alternatives that are satisfying for both parties. The
convergent phase should give rise to the solution of the conflict between parties: the mediator, as a third, as a judge, as an arbitrator, has let the players reach, maieutically, the solution, allowing to attain a reconciliation. Also in the second phase the mediator must proceed maieutically. He does not suggest the opponents how the conflict could be composed, but he has to make they say the way. It is a matter of letting each player, separately, imagine the widest possible spectrum of possible alternative strategies, possible solutions of the problem. The fact that the mediator listen to the players separately, allows him to steer the opponents towards a greater closeness of their possible solutions, with a maieutic rising, as Socrates did. Once the counselor and mediator Socrates provoked an answer from an interlocutor by a question, he asked a more question to provoke a further deepening answer. The aim is to get two solution sets, possibly with empty intersection, or at least close.

A basic contribution comes from metric space theories and fuzzy sets. Indeed, it is useful, to define closeness, that the possible solutions that emerge, be elements of a metric space. Moreover, to any possible solution (of a player, even if just thought, but not explicitly expressed by the mediator) a number of the interval [0, 1] may be associated: this number represents the degree to which, at a certain moment of the intermediation phase, the player agrees the solution. This number may also be interpreted as the utility of the solution from the point of view of the player at the moment.

Let us describe the easy example of the transfer of a house. The players are the seller and the buyer. For instance, the seller would like to earn 200 thousand euro and the buyer would like to pay 150 thousand euro. The mediator should make the seller realize that if he requests an amount x, then he will get a probability v(x) to sell the house that decreases at the increase of x, i.e. this probability is a decreasing function of x. In other words, the seller must choose between a family of lotteries l(x) = (x, v(x)), in which two possible outcomes are: to sell the house with probability v(x), not to sell the house with probability 1-v(x).

The seller, under the influence of the mediator, subjectively assesses probability v(x) and utility u(x) to the choice l(x). If, guided by Ars Maieutica of the mediator, the seller is led to reduce his evaluation of probability, or utility, for high values of x, then he is open to lower the price.

An analogous argument holds for the buyer. Therefore the possibility of close or common solutions and successful mediation between the players related to the selling problem is open.

The diverging phase risk is dispersion and redundancy, i.e., the possibility that each player insert unessential aspects, that are not interesting for the rational solution of the problem, such as prejudicial arguments, tied with selling or buying the house, likes and dislikes, old injustices suffered, rights that the family had long ago, gossip, and so on. The mediator, with regard to these aspects, has to behave as a filter, making the players select the essential features and decide to ignore the unessential ones, showing them the opportunity to quickly and effectively proceed to the search for rational and sustainable solutions of the problems.

In other words, the mediator has to ease the players the opening of the alternatives of the solutions, but also supervise that these are always centered on the same topic, avoid that a completely different context arise about secondary and futile arguments, loosing touch with the central object. The situation is analogous to one in a tribunal, when during the law suit the lawyer raises an objection to the not pertinent question and then he reduces the dispersion, bringing again the attention to the pertinent central kernel.

Like a lawyer, the mediator minds to stop any digression. As he is exploring the divergence, redundancies, i.e., dispersions from the kernel of the problem, must be eliminated. Thus, each time, the mediator asks questions to any single player to enlarge the framework of the possible alternatives and simultaneously, invite him to go to the centre of the dispute. To summarize, the divergent phase may be considered as made of two sub-phases, the enlargement of the possibilities of solutions followed by an action of reduction of the dispersion.

The last phase of the mediation process is the convergent phase. In order to find a mediative and convergent solution, and before the direct meeting of the players, the mediator must made a procedure of logical elaboration based on all the elements emerged in the previous phases. He puts together all the elements resulted by the pre-engagement, i.e. the criteria accepted by both the players, then he considers the fact states and the law states as they have been expressed by the two parties. Moreover he evaluates the fan of the alternatives, i.e. of the possible solutions imagined by the players and invites the parties to eliminate the side and not significant issues. Finally, as in the mathematical reasoning, the mediator must find the consequences compatible with the hypoteses emerged in the previous phases and must submit these consequences to both the players, separately, with the aim of finding the ones accepted by both the parties.
If the intersection of the sets of alternatives is not empty, then the mediator shows all the common alternatives, and evaluates the degree of satisfaction, i.e. the utility, for every player. Let U be the union of the sets of alternatives of both players. We can associate to every player a fuzzy set with universe U and having as support the set of alternatives that he accepts. The value assumed by the membership function in an alternative indicates the measure in which the player appreciates this alternative, i.e. the subjective utility of the alternative. The choice of the best alternative depends on the way in which the utilities of the two players are combined, i.e. whether the players wish to solve the problem as a competitive game, cooperative without transfer of utilities, or cooperative with transfer of utilities.

If the intersection of the sets of alternatives is empty, then the mediator must show some new alternative, invent some new situations, that players had not considered in previous analysis. Every player is invited to enlarge his own set of the alternatives accepted toward directions that lead to meet, or at least to move closer to, the set of alternatives of the other player. In terms of fuzzy sets it means that mediator induces a growth of the membership function of each player in the points of the universe U that are near to the support of the alternative set of the other player.

Finally, after the previous steps, the mediator organizes a meeting with both the players. This happens when there is a wide convergence of the expectations of both the players.

The convergence means:

- acceptance of the same principles for both the parties, i.e. a common pre-engagement;
- approach of the fact state of the two players; this means that the parties arrive to similar reconstructions of the facts, on the basis of a patient work of the mediator that controls the coherence of the two reconstructions and emphasizes the common elements;
- approach of the law state of the two players, i.e. the existence of common elements between the law pretensions of parts;
- a focalization of the common elements in the sets of alternatives pointed out by both players, underlining the utilities for both and the possible compensations in the case of a cooperative agreement with transfer of utilities.

The mediator, if there are not alternatives accepted by both the players, has the job to search for new alternatives that he believes the parties can accept, unknown in the previous process. He must work in a new ground, not explored by players, and must propose to the parts the evaluation of a new set of possible alternatives. Then a new mediation process begins.

Let us consider the example of a soil to divide between two heirs. Suppose that the first heir has a claim on a quarter of the soil and the second on the remaining three quarters. It can happen that it is not possible to make an agreed division of the soil because of its parts have different qualities. In this case the mediator can propose to sell the ground and to divide the takings, or call an expert that divides the soil in four parties and assigns the quarters of ground with a drawn.

These new perspectives form a new set of alternatives that the players had not considered. The ideas of selling, drawing, etc., are new solutions proposed by the mediator as an arbitrator. We emphasize that the idea of drawing is the same that, in game theory, lead to consider mixed strategies. Also in game theory the aim is to explore an extension of the set of the alternatives. The goal is to obtain an equilibrium point that both the players are willing to accept.

To sum up, in the third phase, the convergent one, based on the intersection of the sets of the alternatives accepted by each of the players, the mediator looks for the way of the persuasion. At this aim he tries to get over the controversy by proposing some little renunciations to both players. He shows the negative consequences that happen if the agreement is not obtained, and then he points out the necessity to choose a smaller harm. The strategic behavior is similar to the one followed when, in the game theory, the maxmin strategy is followed.

4. Consensus, metric spaces, and cooperative games

The mediation process among more than two persons not only utilizes models and procedures of the previous Sec., but also, because of its complexity, needs to formalize a dynamical structure of geometric and topological space, in order to represent the degree of closeness and consensus of players in every step of the mediation action.
The geometric space usually adopted is the affine space having as axes all the possible alternatives. In every phase of the process, every player is represented by the point of this space having as coordinates the scores that he assigns to the alternatives. The criteria to attribute scores are generally the ones introduced by Saaty with the AHP procedure (Saaty, 1980; 2008; Saaty and Peniwati, 2007; Saaty and Shang, 2007; Maturo and Ventre, 2009a). The set of players is represented by a dynamic cloud of points that changes its configuration during the mediation process.

The distance between two players is usually based on the Euclidean metric, but often are useful some different metrics. According to whether metric is chosen, meaningful geometric configurations of balls of the metric spaces and coalitions of players are obtained (Maturo and Ventre 2009c).

The closeness of the players belonging to a given group is measured by the minimum ray of the balls containing all the players of the group.

In the first phase of the mediation procedure, the players have to agree on the general principles considered in the previous Sec. (the pre-engagement). Moreover they must also agree on the following points:

1. a mathematical formalization that defines the meaning of the word “consensus”;  
2. a procedure to follow in order to enhance consensus;  
3. a criterion for decision making, and the related algorithms, to apply when the consensus is reached.

An axiomatic and complete treatment of such aspects is in (Maturo and Ventre, 2009b). Essential elements of this mathematical formalization are the agreements on:

(a) how many players are necessary to form a majority with the power of decision;  
(b) the metric to adopt in order to measure closeness of groups of players;  
(c) a positive real number $H$ representing the “consensus threshold”, i.e. such that a group of players is assumed to be in consensus if their elements are in at least a ball with radius $\epsilon$ of the metric space.

The procedure to enhancing consensus is a set of rules that the mediator must follow, and make players respect, in such a way the opinion modifications maieutically induced on the players do not produce the “adverse effects”, as the reduction of the global consensus. On the contrary, constraints are to fix, in such a way only movements increasing consensus are allowed (Maturo and Ventre, 2008, 2009b).

The task of the mediator is to facilitate the increase of closeness among players. He must deal separately with every player, and point out the advantages of a shared solution. Moreover he must emphasize all drawbacks for a player if he is left out from a majority that has reached consensus.

The procedure to enhancing consensus is considered finished if the following two conditions are verified:

1. a majority of players is in a ball of radius $\epsilon$ of the metric space;  
2. the mediator, after a consultation with the dissenting players, i.e. out the ball, establishes that there is no possibility to increase the number of player having consensus.

The techniques utilized in the consensus procedure are, in many aspects, similar to the ones concerning the research of winning coalitions in cooperative games, whose social aspects and implications are emphasized in (Luce and Raiffa 1957) and, for simple games, in (Shapley, 1953; 1962). But, as it is claimed in (Maturo and Ventre, 2009b), the coalitions formed with the consensus procedure are not only winning coalitions but are obtained with a particular dynamic procedure, based on changes induced by a maieutic and scrupulous work of the mediator.

As in the previous Sec., the recourse to fuzzy sets, fuzzy numbers, and linguistic variables in order to express opinions of players can facilitate the work of the mediator, because of the flexibility and adaptability of the fuzzy concepts to human reasoning and to gradual changes of opinions (Zadeh, 1975a, 1975b, 1975c; Mares, 2001). The fuzzy sets of the decisions accepted by each of the players are now more than two, and by a geometric point of view, the cloud of points is replaced by a cloud of fuzzy points, i.e. spots with a dark central area and a light peripheral area. Fundamental tools for dealing with fuzzy extensions are the theories about fuzzy games (Mares, 2001), Zadeh operations (Zadeh, 1975a, 1975b, 1975c) and alternative fuzzy operations (Maturo, 2009).

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