

**ROLE-PLAYING GAME IN NEGOTIATION ON
IRRIGATED SYSTEMS : BETWEEN PLAY AND
REALITY.**

Proposal of a methodology

W. Daré and O. Barreteau¹

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Abstract

Experiments, which associate MAS and role-playing games, have shown synergies to tackle the complexity and the dynamic social systems sharing common resources. A role-playing game was invented to open the black box of a multi-agent model to farmers interviewed in irrigated systems of the Senegal river valley. A role-playing game is composed with four features: the game, the animator, the observers and the players. This paper is focused on players and their relationships developed during the RPG. In an irrigated system, what could be the links between real process of negotiation in relation to a common problem and those appearing during a role-playing game? To tackle this issue a methodology is proposed.

This paper aims at presenting the methodology made *ex ante*, the hypotheses done, the results expected to confront them to field results. It begins with a presentation of the context of the research and a description of the RPG. The second part describes the methodology used to characterize negotiations. Different methods are used to register and analyze relevant data in negotiation processes in the game and in the reality. Three aspects of the negotiations are investigated : interactions of actors, the topics developed in the discussion, and the non-verbal aspect. The last part puts the methodology back in the context.

Keywords : role-playing game, negotiation process, irrigated system, Senegal, methodology.

Introduction

Mucchielli defines the role-playing game (RPG) as a construction of a problematic situation in which persons are acting given-parts. He assumes that a RPG is form by three elements. The **game** is composed with a system of specific rules and a description of the world in which the party is going on. The **animator**, also called game-master, organises the party. He knows all the rules. He has to create the atmosphere of the game. **Players** are actors in the party. Each player makes his own role by following the rules (A. Mucchielli, 1983). For us, there is also the **observers** of the game. They do not participate to the game but they are present and they notice crucial data to the analysis of the party.

This research is focused on players. They interact, take decision and express viewpoints. From information exchanged, they make a solution to the setting problem. In this research, players belong to the same social community. What can be said in such a situation about the players' interactions? Are the rules of the game framing all the interactions between players ? Or in another way, do the relationships and social norms sharing by players overdeterminate their interactions in the RPG ? What is the part of social reality in each player making-up of its role ? What is the part of social reality in the type of players' interactions to resolve the problem occurred in the game?

This paper presents a methodology to tackle these issues. It is based on complementary analyses of virtual and real contexts of negotiation. It consists in the characterization of a real situation where people are interacting to solve a *common problem*. These people belong to a same social system and the common problem is occurring seasonally in Senegalese irrigated systems. An irrigated system is a common pool resource shared by different stakeholders (E. Ostrom, 1992). It is the theater where different stakeholders belonging to the same social community have to interact to manage water. In this context, questions presented above become : **in an irrigated system, what could be the links between real process of negotiation in relation to a common problem and those appearing during a role-playing game?**

This paper aims at presenting the methodology made *ex ante*, the hypotheses done, the results expected to confront them to field results. It begins with a presentation of the context of the

¹ CEMAGREF, Irrigation research unit, 361, rue J.-F. Breton BP5095 34033 Montpellier Cedex 1, France.
williams.dare@montpellier.cemagref.fr,
olivier.barreteau@montpellier.cemagref.fr

research and a description of the model. The second part describes the methodology used to characterize negotiations. The last part puts the methodology back in the context.

1- The context.

We introduce, first, the issue of the local management of rural credits as a *common problem*. All along the paper, it will serve as an example of negotiations in the game and in the reality. Then, the RPG *Njoobari ilnoowo* is described.

1.1 Choice of choose rural credits as main topic in the negotiation observed

1.1.1 A constraint : negotiation about the same recurrent topic.

The methodology is based on negotiation processes appearing in the irrigated system. To be more efficient in the analysis, we focused on processes repeated several times and on negotiations central for the management of the common resource studied. The recurrence of the topic of negotiation is necessary to improve the methodology. The central point is the medium on which intense stakes are expressed. When social relationships between stakeholders become understandable to the researcher, we may be able to grasp the negotiation process.

That is why negotiations dealing with rural credits management in irrigated systems have been chosen. The next paragraph shows that, in the management of irrigated systems in the valley of the Senegalese river, rural credits are common, central and recurrent problems.

1.1.2 Rapid historic of the irrigated agriculture in the valley of the Senegalese river.

The irrigation in the Senegal river valley increased with the Independence of the Senegal. This political choice was made to support the economic development of the country thanks to the outcomes of agriculture production. Irrigation, mainly financed by international donors, was based on modern hydraulic infrastructures and on the training of farmers. Everything was mechanized. Primary, secondary

and tertiary schemes were built to control water even more. After droughts of the 70's, Senegalese government increased its building of tertiary irrigated schemes. The development of the valley evolves differently from a region to another, because of the density of populations. In the delta, sparsely populated, big irrigated perimeters (BIP) were constructed. In the middle and the upper valley, densely populated, village irrigated perimeters smaller than previous ones, intended to small groups of farmers, are built in association with BIP (P. Boivin et al., 1995; G. Diemer et van der Laan E. Ch. W., 1987; B. Crousse et al., 1991). Between 1976 and 1996, irrigated surfaces increase tenfold particularly with the development of private irrigated schemes (L. Liagre, 1997)

Nevertheless, the results were less than donors and Senegalese government expected. The production is very expensive because of the over-mechanization. Thus, farmers became dependent of rural credits to produce in irrigated schemes. Yields stagnate. Substructures are deteriorating quickly. The cost of their rehabilitation is weighty. In front of these relative failures associated with economical difficulties, the Senegalese government has to retire itself from the agriculture activities. The hydraulic management is transferred to farmer organizations, the financial management to the national bank of rural credits (CNCAS), and the tenure management to rural communities. Private enterprises take the rest of activities in charge (B. Crousse et al., 1991).

1.1.3 Place of credit in the rural production process.

Because of the political choice made, farmers are now financially dependent from the outside. The cost of mechanized production is so hefty that farmers need credits to produce in irrigated schemes. Usually, farmers' organizations (GEI : Group of economical interest) express their needs to the CNCAS. The credit allocation depends on the repayment of the last campaign credit engaged. With the low yields, not all the credits requested are given. Moreover, with the high costs of production in irrigated systems, some farmers have developed strategic behaviors about credit repayment. Now, they use differences sources of credits (CNCAS, individual lenders, local banks) and allocate those obtained to produce in their different plots. Therefore, credits are in the center of interactions between members

of GEIs, members of the social community and villagers. Exchanges are all the more important because, with the high cost of production, a minimum of farmers producing in the irrigated schemes is necessary.

In each campaign, the problem of credits appears again. The access and the management of credits are central in the irrigated schemes. They are the support of some social interactions between stakeholders.

1.2 Description of the Njoobari ilnoowo role-playing game.

This RPG was built in an accompanying approach developed with farmers of irrigated schemes in the valley of the Senegalese river (O. Barreteau et al., 2001). This RPG is extracted from the MAS Shadoc (O. Barreteau, 1998). It is a of MAS with agents who are not computer entities but human beings.

1.2.1 Introduction to Njoobaari ilnoowo

The game is playing with 10 to 15 players. Players are farmers in an irrigated scheme in the Senegal river valley. They all cultivate only rice.

Space is partitioned in two areas, one hidden from the other. In the first one, players are divided in two villages separated by several kilometers and an old dispute. Therefore, there is no communication between villages in this zone. The second area represents the irrigated scheme where players are organized in two farmers' organizations. People from both villages can be in the same group. The irrigated scheme is drawn on a blackboard. When players are in this zone, they can communicate. Each organization is in charge of the management of a watercourse. Every player has got only one plot. One pumping station supplies water to every watercourse. A chart is used to allocate water among plots opened. The allocation depends on the number of plots of a secondary network opened in the same time and their relative place. Everybody knows this abacus. A factor for the evaporation of water is also applied.

Players follow rules given in the game which determinate the role of everyone. At the beginning, farmers draw three cards at random.

These cards written in pulaar, wolof² and french define their basic behavior during the session. Three parameters characterize each players :

- a social status (among a hierarchy of four) that determines the possibilities of exchange of work or credit (figure 1) ;
- a goal of production in the plot, among a set of three different by their level of intensification (figure 2). To cultivate by sowing one of the two varieties of rice (a long one and a short one), they have to pay inputs according to this card. These cards determine also the yield obtain after harvesting ;
- a rule of repayment of credits among four (figure 5).

Figure 1 : Status cards

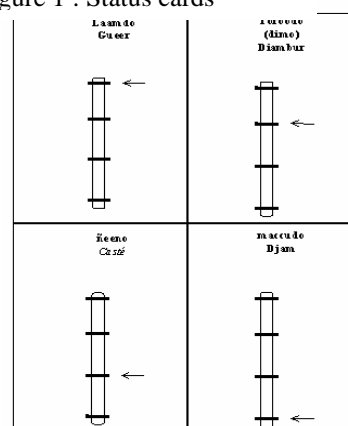
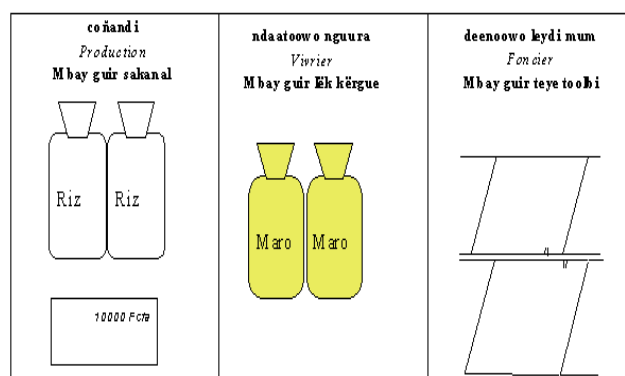


Figure 2 : Goal cards



1.2.2 The RPG progress

The game is the succession of several cropping seasons. During one season, three stages are occurring : search of credits, irrigation/production activities, appraisal of the season (figure 3). On the first season, credits are supposed to be given by the bank to cover all purchases of inputs.

² two senegalese languages.

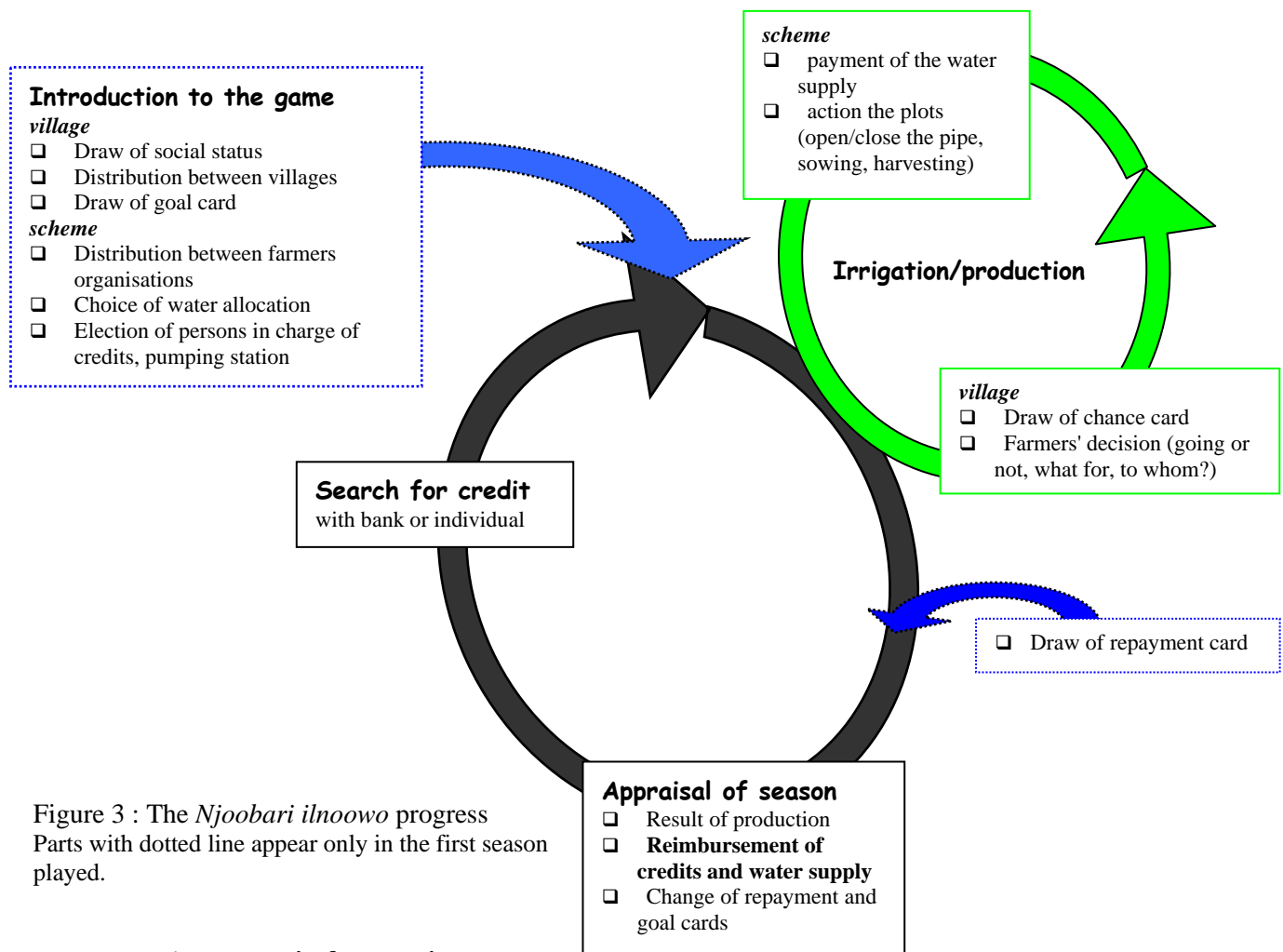


Figure 3 : The *Njoobari ilnoowo* progress
Parts with dotted line appear only in the first season played.

□ **Stage 1 : Search for credit.**

To cultivate rice in the irrigated scheme, farmers need credits. In this first stage, we suppose they got all the credits they need. They receive different credit according to their goal card. But they will be able to reimburse it during the appraisal stage (stage 3). So at the beginning of the game, this first stage is not played.

□ **Stage 2 : Irrigation and production**

At the beginning of the game, each player receives the cards that define his role. They are distributed randomly in the villages and in the farmers' organizations. They choose (i) a chief for each farmers' organization, (ii) a manager of the pumping station and (iii) a person in charge of credits. In the scheme area, the chief decides with his group the allocation rule to his watercourse. So these players have got two roles : a collective one and an individual one.

In the village area, the players belonging to the first farmers' organization draw randomly a occasion card (figure 4). A combination between the card drawn and their goal card allows them or not to go to the scheme area. In the scheme area, a board is drawn with the position of each plot's player. Each plot is initially dry. Farmers decide to open or close their pipe by following the collective rule of water allocation in their watercourse to irrigate their rice. They leave this place to return to the village area. Then come the members of the second organization, who are allowed to go to the scheme. At each turn, water level and state of cultivation of each plot is computed according to an abacus (figure 5). Everybody knows this abacus. This is repeated about eight times in a season until the rice is ripe enough to be harvested.



Figure 4 : Occasion cards.

If the pipe of one plot is opened in the watercourse, it receives :	+60
If the pipe of two plots are opened in the watercourse (in the order) :	+40, +20
If the pipe of three plots are opened in the watercourse (in the order) :	+35, +17, +8
If the pipe of four plots are opened in the watercourse (in the order):	+32, +16, +8, +4
If the pipe of five plots are opened in the watercourse (in the order):	+31, +15, +8, +4, +2
If the pipe of six plots are opened in the watercourse (in the order):	+30, +15, +8, +4, +2, +1
(The water level of a plot can not exceed +30)	
For all the plots with a negative water level, the evaporation is :	-3
For all the plots with a positive water level, the evaporation is :	-6

Figure 5 : the abacus

At the end of the season, the manager of the station stops pumping.

□ Stage 2 : Appraisal of the season

When the rice is harvested, farmers sell their produce and receive their equivalent in virtual money represented through paddy bags. This equivalent depends on their goal card and the number of stress events suffered by the crop. They draw randomly repayment cards among four (figure 6). Managers of the bank and of the pumping station sit and wait for farmers' reimbursement. Then, if they are allowed, they can pay their credits back to collective (bank and pumping station) and/or to individual farmers.

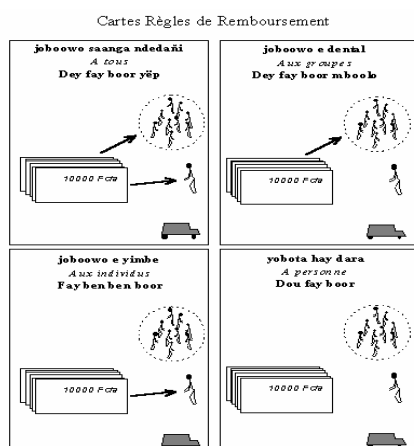


Figure 6 : Repayment cards

□ Stage 1(2) : Search for new credits.

At this stage, backers decide the rule of loan among three. If they need, farmers can get into debt with individual or collective backers. At the end of this stage, farmers are ready for a new season.

An average session includes two seasons in a half-day.

2- The methodology : complementary analyses of negotiation processes in the RPG and in the social reality.

2.1 Three hypotheses to tackle the link between play and reality.

This methodology was built to give some answers to the problematic issues : What part social reality has in the playing of players of the RPG? May the RPG be helpful to decode social interactions of real processes of negotiation ? And what consequences may the use of model have on local processes of negotiation ? In order to shed light on these interrogations, three hypotheses are made :

Hypothesis 1 : The game is accepted as a schematic representation of reality

Stakeholders interviewed had validated partly this hypothesis when the model was presented to

them (O. Barreteau et al., 2001). Moreover, this research tries to go further in the validation of the model. The question of the part of the reality involved in the RPG is visited here through its aspects of representation. Roles presented in the game are caricatures of real roles as farmers had already recognized. Here, the question is about what is really represented for villagers in the game. And this interrogation is linked with another one : what is it accepted in their validation? Is it only the characters represented or also the relationships between farmers in the irrigated scheme?

Hypothesis 2 : The social background of actors interferes with roles playing in the game

Then appear the second hypothesis. Roles in the game are framing with formal rules. Characters played are not real because their actions are limited by the game. Therefore, actions and behaviors of players are supposed to be under control. Players are members of the same village. They share values, norms, habits and history that determine their behaviors and relationships in the real life. All these elements structure their actions and compose the *habitus* of Bourdieu (P. Bourdieu, 1980). Even if game is out of life (J. Huizinga, 1951; R. Cailliois, 1967) they are not supposed to abandon their *habitus* before playing. And this interferes with their behaviors caricatured in the game. How players use their social background to act in the game? May real social or economic hierarchy be reproduced or changed in the virtuality of the game ?

Hypothesis 3 : The game emphasizes the expression of social relationships between players

Supposing the second hypothesis done, what are the consequences on the expression of social relationships between players in the game? The RPG speeds time up and compress real space. Two seasons, representing a year in the reality, are played in a half-day. Players can go from the village to the irrigated scheme in few minutes whereas in reality they can be several kilometers apart. Therefore, in one place different stakeholders may be represented and express, defend and justify their viewpoints. In this compressed atmosphere, may social relationships become perceptible, obvious, or understandable to the researcher? Or players are so embedded within their common social background that they do not need to express them in the game?

The set of these three hypotheses tries to investigate the interrogations of the problematic. Thus, the methodology should be helpful

- 1- to record the elements to describe and understand individual or collective players' behaviors in the game
- 2- to grasp behaviors that belong to the rules of the game *sensus stricto* and those which do not.
- 3- to explain the distance between behaviors observed and ones expected

The methodology should provide sources of deviances observed. Following the hypotheses done, the methodology explores individual or collective farmers' behaviors in real processes of negotiation on rural credits. Therefore, **the methodology is based on a synergy between real and virtual contexts, the one highlighting the other and vice-versa.**

Test all these hypotheses imply to register all relevant information in the game and in the social reality to piece together the stages of negotiation processes. The methodology is developed in order to characterize negotiation process in the game and in the social reality. Thus, the methodology is :

- 1- to set up a system to register information occurring in the role-playing game, to analyze them, and then come to players with specific questions to better understand their behavior and actions during the game.
- 2- to identify stages, stakes and stakeholders in real negotiation process on rural credits.

2.2 Recording material to pick up information

2.2.1 In the role-playing game

A set of sheets has been created to record all physical operations on the irrigated scheme. This sheet is filled in by an facilitator. All cards (chance, repayment, goal, status) are noticed by each player on a personal sheet. On each turn, they indicate actions they wanted to do and after going to the scheme, the actions they have really done. The sheet for players is very simplified. Symbols have been created to allow illiterate players to record information too. Therefore, all formal actions are registered.

A camcorder is also used to record negotiation in the irrigated scheme area. The camcorder is located their till the end of the campaign. During

the reimbursement and the search for credits phases, the video takes place in the village area.

2.2.2 In the real negotiation process

The video is not easy to be used for two reasons : first, because the negotiation process is not localized in space and time, and second, because stakeholders may refuse the presence of the video. Therefore, the record of information is done by writing minutes of meeting on credits and sociological interviews. The aim of these interviews is to construct *a posteriori* the history of the negotiation process about credits on the last or actual campaign. The crosschecking of information given by different sources is realized. Stages, stakes, stakeholders and simple farmers are identified and interviewed about their place in the process, their actions, their viewpoint about the solution found.

Video recording is used because many interactions occur between more than two players. They are moving in the space, expressing their actions and reactions with their body. So, a lot of information appear in the game and it is difficult for an observer to record them all. To increase the number of observers could have been an idea, but the number of information conveyed and the limit of observer have also directed the choice to a video recording system. The problem is the importance of the information. This main difficulty imposes to think of the methods used to classified information helpful in the analysis.

2.3 Analysis of negotiation processes

Negotiation processes in the game and in the reality are analyzed through three sides : interactions of actors, the topics developed in the discussion, and the non-verbal aspect.

2.3.1 Analysis of interactions between actors with the Bales's grid (1950) and the Moreno's sociogram (1934)

□ Bales's method

Theoretical foundations

Two theoretical trends in social psychology analyze the behaviors of persons involved in a negotiation. The first one describes what people are doing : this is the behavioral approach of

decision making. The second one focalized its analysis on relationships between actors : this is a type of interactionist approach. Bales belongs to the second one.

He tried to make empirically a detailed list of behaviors to describe social interactions within small groups. He had built a list of 12 categories. Six belong to the "task" and six else to "socio-emotional" aspects. He proposed an analysis of the general functioning of "social actions" that characterizes small group. Bales considered that small groups go successively from task position to social-emotional problems. First, members of a group are focus on instrumental aspects to reach the goal they are organized to. But their activity creates socio-emotional reactions which become more and more important in the group. At a certain point, members of the group decide to concentrate and resolve socio-emotional difficulties to go further in their instrumental task. They defuse these socio-emotional problems and then instrumental troubles appear again, and so on till they reach their final goal. The members of a group should communicate, should be able to make an assessment of the situation and then control the features to solve the problem presented (R.F. Bales, 1950).

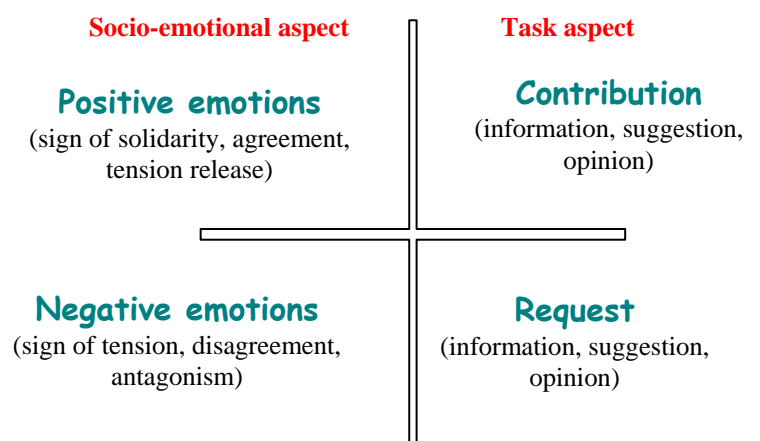


Figure 7 : Simplify Bales's grid

The method

Considering two individuals X or Y members of a group. X says a sentence P1 to Y. Y answers to X by saying P2. An **interaction** is defined as a sequence of sentences said by one person. Here, the interactions are coded with the four main categories and numbered. Each actor's speech is classified in one of the categories. In the figure 8, Actor 2 welcomes players (interaction 1, noticed

in positive emotion). Then, Actor 3 presents to the group the goals of the meeting (interaction 2, contribution). With the sums, some graphics showing the structure of the discussion analyzed can be made.

Participants	CATEGORIES					
	Positive emotions	Negative emotions	Contribution	Request	Hubbub	Total
1		7	6		10	2
2	1	8		4-14		4
3			2			1
4				3-13	10	2
5	11		5-12			3
6		9		10		1
...						0
Total	2	3	4	4		

Figure 8 : Coding of interactions

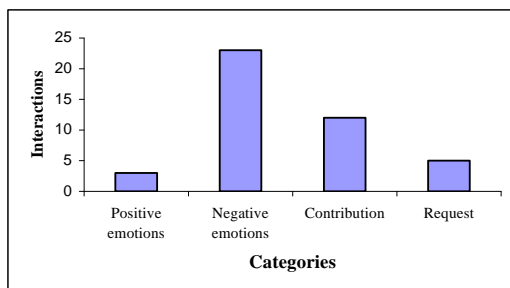


Figure 9 : Interactions=f(categories)

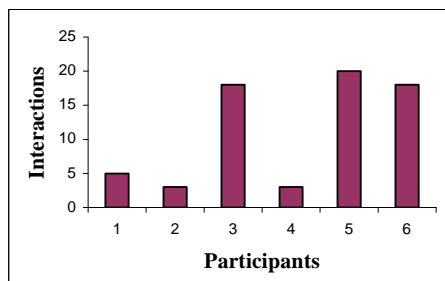


Figure 10 : Interactions=f(participants)

The figure 9 gives information on the nature of interactions appeared during the discussion. For example, if the categories "negative emotions" and "contribution" are more important than the others, this show that the discussion was tense and all the actors have express their viewpoint without listen to the others. The figure 10 gives information about who is the more active in the discussion.

Interest and limit of the grid

One of the main interests of the grid is the characterization of social interactions between actors. The method gives also an idea of the dynamic of the discussions.

The limits are :

- the coding of interactions is subjective. However, we consider that the subjectivity of a same observer is little variable.
- only verbal interactions are coded, all non verbal aspects or the themes of the discussion are missing.
- one parameter determines the importance of actors in the discussion : his talkative character. Nevertheless, a talkative person in a group is not necessary the most influent in the solution found to solve the problem faced.
- social networks of actors are missing in this method.

□ Moreno's sociometric test

Theoretical foundations.

J.L. Moreno (1954) created the sociometry to go beyond the old quarrel in social sciences between the quantitative, *metrum*, and the qualitative, *socius*. For him, the deep structure of a group is not easily understandable through social interactions. There is no proof that superficial structure reproduces deep one. J.L. Moreno supposed that the best conditions to make structure understandable is to transform members of the group into actors. In this situation, their motivations are supposed to be obvious, so that their actions should reveal the real structure of the group. He proposed a set of rules that an observer can use to create these conditions. In this situation,, individual (in a *psychodrama*) or group (in a *sociodrama*) are asked to play their role as in the real life. J.L. Moreno also built a set of sociometric methods like sociometric test or the sociogram (JL Moreno, 1954)..

The sociometric test is based on the members' answers to one question : if they would have to make a specific collective activity who do they choose or reject? This test was built for the first time with family-groups, workers-groups and school-groups. The sociogram is the graphic expression of the results of the test.

The method

After asking the question, a diagram is drawing which represents choices received from others members of the group and choices expressed. For each member the number of choices received and expressed are summarized and classified (Figure 11).

		Choix reçus																		
		AV	CP	CS	CG	DF	EJ	FV	FP	GD	IC	JL	LA	NM	PM	PS	RC	YH		
Choix émis	AV										X	X	X		X					
	CP			X		X	X									X		X		
	CS		X		X	X										X		X		
	CG							X				X				X	X			
	DF		X	X	X		X								X					
	EJ	X	X	X																
	FV									X			X		X			X		
	FP							X				X			X					
	GD		X					X								X				
	IC	X												X	X			X		
	JL	X						X	X							X				
	LA	X						X							X	X		X		
	NM								X		X	X	X				X			
	PM	X						X	X	X								X		
	PS	X						X			X	X					X			
	RC									X			X		X					
	YH					X			X		X			X		X				
			6	4	2	3	2	5	4	5	2	4	7	4	3	11	1	3	5	72

Figure 11 : Sociometric test³ (example on scout population)

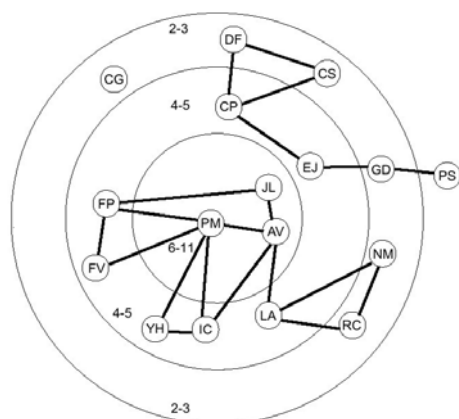


Figure 12 : Sociogram⁴

A target is made. In its center, the member with the highest total is represented (PM in the example). In its periphery, the member with the lowest total is placed. Each member is symbolized. Symbols representing individuals who have been mutually designated are linked. Couples can create networks of members (PS, GD, EJ, CP, CS and DF). Some of them not mutually designated are lonely or excluded of the group. The one in the center is the most popular, he develops many relations with others members (figure 12). This sociogram is essentially based on mutual designation. What about unilateral designation? ie when a person designated people who did not do the same. The figure 13 gives this type of information.

Interest and limits.

The main interest of this method is to give a photograph of networks in the group when the question is asked.

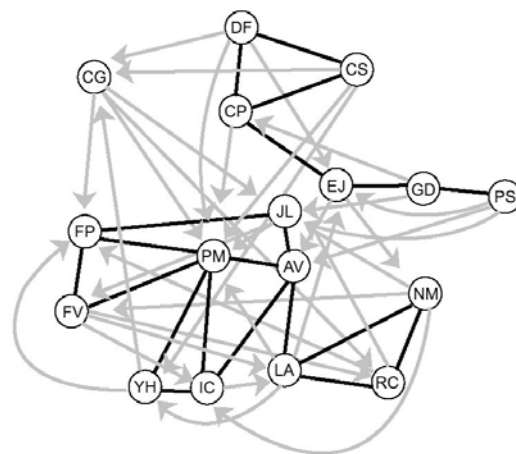


Figure 13 : Unilateral choices

But this interest is also a limit because this method can not reveal the dynamic of networks in the game. It only reveals (by comparing several photographs) whether the relationships in the group have changed or not. Second, the results of the test are dependent of the type of question ask. Last, the method is based on an expression of choices and rejections that could crystallize some conflicts in the village. That is why we do not investigate the reject side of a question to create the sociogram.

These two methods give different information about social interactions in a small group. The two are focused on individual behaviors. Nevertheless, the results expected belong to collective and individual level of organization. These methods are complementary but they give discrete information and some parts of the negotiation process are not investigated.

2.3.2 Thematic analysis of negotiation processes

The two analysis presented in the upper part do not give information of the topics of the discussions in the negotiation. Nevertheless, people are not involved in the same way in all the themes of a discussion. So, we have to notice data concerning : topics and stakes of discussion, who takes part in the discussion, what are his arguments, does he succeed or fail to convince other members, how does he manage, who are the members sharing or facing his point of view. Sociologic interviews are done in order to give these data.

³ <http://www.scout.org/lgs/arch/AS002.pdf>

⁴ *ibid.*

2.3.3 Analysis of non-verbal exchanges in negotiation processes

The main support of all these analyses is speech. But, social *habitus* also influence physical position of people and their repartition in the space. A glance may be enough to express his point of view. A person standing back from the others in a discussion can be a sign of exclusion (he has no right to participate to the discussion) or, on the contrary, superiority (he is the final decision-maker so he doesn't need to take part to the discussion). To tackle the features of non-verbal exchanges a grid is in construction with sociologists and psychologists from the Senegalese valley.

With this set of methods to analyze negotiation, the interactions between participants, the themes developed in the discussions, and the non-verbal language are investigated to grasp processes of negotiation in the game and in the social reality. The complementarity between these analyses is necessary to make negotiation processes more understandable. But how are these analyses combined in real and virtual negotiations ?

3- Put the methodology back in its context.

The methodology presented is adapted to the two contexts of analysis. It is developed in a virtual world during game session and in the real world of Senegalese irrigated systems during negotiation about the management of rural credits. The aim of the methodology is to test the hypotheses done in the previous part. The investigation of real negotiation processes is made to highlight observations and analyses of negotiation processes in the RPG. On the other hand, the analyses of the distance between roles played and roles expected (with the rules given) provides information on real social parameters that influence the negotiation in the game. The two contexts are complementary to the research since one is helpful to understand the other and *vice versa*. Put the methodology back in its context is also necessary to obtain a dynamic analysis.

3.1 In the role-playing game

The video is first analyzed with the four methods without players. Then a debriefing is done with them, to compare their behavior with what we expected. What we expected is the result of simulations made thanks to the sheets filled in. This part of the research is very important. Because people may interact directly with the group, justify their actions and opinions and reveal clues to our understanding of the negotiation process. A second debriefing is done individually with players whom behavior is remarkable (characteristic, out of the norm,...).

3.2 In real negotiation on rural credits

The analysis of real negotiation processes depends, first, on the occurrence of a meeting on credits during the presence of the observer, and then, on the acceptance of a video by farmers. The question about the influence of a camcorder on the discussions between villagers is not what it is asked here. As Duranti we consider that our presence in the village has already influenced the social life. It is just a case of the observer-participant paradox (A. Duranti, 2002).

- 1- There is a meeting and the use of a camcorder is accepted. All the four analyses are done (as in the RPG). Sociological interviews are realized to piece together the historical elements of the negotiation process by multiplying viewpoints. These interviews are focused on stakeholders present when the final decision is taken, persons who played a part during the process and farmers affected by the results of negotiation. Feedback interviews are essential to this analysis.
- 2- There is a meeting but the camcorder is not accepted. If the presence of an observer is allowed, thematic and non-verbal methods are associated with sociological feedback interviews to analyze negotiation process.
- 3- There is no meeting. Then we use only sociological feedback interviews.

4- Perspectives : the results expected

The methodology presented in this paper is based on different synergies. First, the materials—sheets, video and sociological interviews - to register data in the reality observed in real negotiation processes or in the RPG are complementary. The synergy of the three is

necessary to record information. Second, four methods – Bales's grid, Moreno sociogram, thematic analysis, and non verbal exchanges - are useful to analyze three aspects of the discussion of members in small groups. The synergy of these methods is a main feature of the methodology. Last, there is also a synergy between the two contexts to tackle the problematic issues. The analysis of the RPG give information about processes of negotiation during the game. And this may be helpful to analyze the negotiation in the reality observed. Vice versa, the analysis of real negotiation processes may give data to improve our understanding of the common social background and the way it is involved in the behaviors of players. Therefore, the data grasps in one situation can be helpful to understand what is going on in the second.

As the research is going on, some results are expected :

- a description of real negotiation processes,,
- a rigorous method to analyze the use of RPG in real systems,
- in a longer term, the analysis of the influence of these tools on local processes of negotiation.

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