Assembling different forms of knowledge for participative water management - Insights from the Concert'eau game

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Assembling different forms of knowledge for participative water management Insights from the Concert'eau game[1]

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Abstract :

In the environmental field, water management provides examples of the move towards participative democracy. Indeed, French water policy promotes participative river basin management settings. Such settings place different forms of knowledge in contact with each other, and raise the issue of assembling this plurality within the decision-making process. How to combine scientific, lay and diverse cultural forms of knowledge? "Hybrid fora" (Callon, Lascoumes and Barthes 2001) are political settings which tackle this issue, using the principle of symmetry.

Following this pragmatic stance, this communication paper studies how "participants" assemble different forms of knowledge, specifically focusing on plural cognitive forms; from the most personal to the public. How do people cope with their attachments to the environment while participating in "governance" practices? How do they cope with the necessity of making people and things equivalent and general? This paper focuses on these tensions, relying on Thévenot's framework of "regime of engagement" (Thévenot 2000). This author analyses people's shifts between different "pragmatic regimes of engagement" ("familiarity", "regular planned action" and "justification") and moral treatments of their attachments to the world. He examines the "familiarity regime of engagement" which is wrecked in public arenas.

The Lentilla and the Llech are two Mediterranean rivers in the south of France where the predominance of agricultural water uses is being challenged by environmental issues and the development of recreational water uses. A new approach to sharing water is needed. The existing political modalities of management are of the community type and lean on interpersonal arrangements. Based on strong social links, they have proved efficient. But today they are encountering difficulties as they are required to make room for new people with particular concerns regarding water. As a consequence, some of these people ("neo-rurals" and the French water agency) are requesting public debates and the development of formal settings (management plans, rules and regulations, contracts, standards…) in order to guarantee the integration of their "good" including satisfying interests or moral principles and protecting personal ties.

This paper focuses on participants' "engagement" and the assembling of knowledge forms in the Lentilla and Llech participative water management settings. Interviews, observations of meetings, as well as an experimental game, are used. This game aims to make people experience shifting between pragmatic regimes: from familiar engagement to public formats as well as between various water management "orders of worth" (Boltanski and Thévenot 2006) in order to make "compromises". The game is assumed to be suitable for simulating the composition of heterogeneous pieces of knowledge and for supporting participative management. The paper presents the case study, the game, its theoretical background and the first results of its experimentation.

Text:

In the environmental field, water management provides examples of the current move toward participative democracy. During the last 45 years, water policy has moved from a technocratic sector-based and centralised form of management to one that is more local, integrated and participative. Water policy also increasingly considers the river basin as the relevant area for water management. French water policy promotes concerted river basin management settings and provides incentives for a move toward collective decision processes. However, river basin management settings place different forms of knowledge in contact with each other, raising the question of how to combine this plurality within the decision making process. For example, an advisory committee dealing with the flooding issue in the Orb Valley (Richard-Ferroudji 2003) featured participants discussing flood management action. In discussion about flooded camp sites, a camp site manager was asking for public financing of dikes to protect camp sites:

> *Camp site Manager: "We are always the ones asked to pay. Supermarkets benefit from tourism but pay nothing. Camp sites provide the region with tourism and make it wealthier (…)*
> *Elected representative: « The amount involved is nothing for this area. Your problem is you lack political support (…) You need somebody to represent you with local government.*
> *Camp site Manager: " (…) Nobody cares if I go bankrupt."*
> *Elected representative / meeting chairman: "I understand your position. It is natural. You are raising the general issue of the civil service trying to grab juridiction over questions that decentralisation gave to elected representatives. (…) This is the first time that I've seen you speak out like this but it's all too much for you."*

Several arguments were being raised here: on the level of value, with justification of public support through market arguments; on the strategic level, concerning distribution of power; and on a more emotional level with the indifference to the camp site manager's bankruptcy. The meeting also dealt with French risk policies, laws, lack of legitimacy of a decision-maker and dike efficiency both according to an engineering study and according to participant experiences. This example illustrates how scientific, lay and diverse cultural forms of knowledge interact in collective decision processes. How do participants handle such different forms of knowledge? How do they reach decisions? This paper focuses on the assembling of different knowledges and "goods" for collective decision-making. It first presents the theoretical background, then the case study with the methods used, including a game. Finally it reports on preliminary results of its experimentation and discusses these results.

1. Analytical approach: assembling several forms of knowledge

River basin management programmes propose different spaces for collective debates, such as advisory committees or river basin committees. These spaces can be described as "Hybrid fora". "Hybrid fora" are major deliberating mechanisms to manage controversies over scientific and technological innovations (Callon, Lascoumes and Barthes 2001). According to these authors, a hybrid forum must be a space where those taking part can explore options and learn together, a process in which the identity of participants may change or be built up over time. Popular knowledge is not discredited and considered illegitimate but, on the contrary, respected and taken into consideration. The aim is to free up and open the debate among all parties affected (including scientists, industrial corporations, institutions, associations, and the public), such that all opinions can be heard and respected. To make the assembling of knowledge possible, a setting should therefore allows diversity to be defined by the

participants themselves; otherwise this will happen outside the debate situation. Even non-human beings (such as fish or floods) are aligned with human beings in actor-networks through processes of "translation". The aim is that the result of the debate can be taken into account in the decision-making process, in a manner that is transparent from the outset. In fact a hybrid forum manages controversy, leaning on the principles of symmetry and publicness. Debate is framed such that any piece of knowledge can be proposed, discussed and potentially included in its hybrid outcome. This issue of hybridisation or translation has given birth to a wide range of mediation tools and methods: focus groups, public debates, brainstorming, stakeholder assessments, participatory modelling, etc. (Selin and Chavez 1995; Cockes and Ive 1996; Babin, Bertrand et al., 1999; Kraft and Johnson, 1999).

All these tools and methods aim at combining various sources of knowledge. They meet an older tradition in the field of support to public policies through the use of models, be they computer based, maps or mere verbal metaphors (Saunders-Newton and Scott, 2001). While these were focused toward a single client, collaborative settings make the issue of interfacing the tools with their public of use more difficult. Recent developments in computer sciences have provided models, such as Agent-Based Simulation models (Ferber, 1999 ; Moss and Davidsson, 2001), which are able to gather heterogeneous sources of knowledge and can be used in interactive settings (Bousquet, Barreteau et al., 2002). In recent years these mediation support tools have flourished. While they sometimes differ only in the terms used by their authors, they nevertheless often differ in the artefacts deployed to facilitate the assembling process, their institutionalisation, their scale of intervention (Dzizdzicki, 2001). They are all aimed at achieving an agreement among participants, which may involve organising tradeoffs among interests or very long-term "patrimonial" objectives (Babin, Bertrand et al., 1999).

How does hybridising occur in practice according to the "goods engaged"?

The issue of better understanding the conditions for a real debate and assembling the diversity of views available acompanies the recent flourishing of mediation support tools. To tackle this issue, we focus on the hybridisation process in situation. In the introductory example, participants have to simultaneously take in a participant's bankruptcy, EU policy for risk management and criticism of "public services" How can they deal with all these concerns in the same framework? We analyse how people act in hybrid fora, using the framework of "regimes of engagement" which links cognition and action (Thévenot 2000). We observe people acting in collective discussions, relying on "pragmatic regime" categories (Thévenot 1999). This framework aims "to account not only for the movements of an actor but also for the way his or her environment responds to him or her and the ways that he or she reacts to these responses". "Regimes of engagement" link "the reality and the good engaged". A person's good is undestood as "what is good" for him or her. Using this framework entails considering people as autonomous beings engaged in interactions, with moral capacities (values and principles), strategic capacities (interests and intentions), and feelings and emotions. The kind of good which governs their engagement in situation varies from personal and local convenience to collectiveand legitimate conventions.

Justifying water management approaches

Firstly, hybrid fora feature participants justifying the legitimacy of arguments within the democratic polity. Actors demonstrate the situational appropriateness of their criteria of evaluation and find material proof that their arguments are grounded. For example, the camp site manager argues for funding the camp sites' protection because they make the region wealthier. He underlines the importance of tourism infrastructure for the river basin's economic development. At this stage, he is acting in the discussion in a "regime of

justification" (Boltanski and Thévenot 1999, 2006). In this regime, people offer many different descriptions of the situation relying on various conventional types of information. Boltanski and Thévenot identify "orders of worth" which constitute "common forms of public evaluation and which are grounded on the same grammar of the common good". Thévenot (2000) studies a road and tunnel project controversy and describes the plurality of "worthy roads". The road can be described as "a highway of market worth" which is opening landlocked areas to market competition. The project can also be justified as efficient infrastructure. The road can also be seen as a "customary way of integrating locals" or "a famous scenic route". But opponents can argue that it is an environmental scar. In our introductory example the camp site manager justifies his claim for market reasons.

This regime of justification leads to a first definition of assembling plurality and forms of knowledge, as deciding which arguments are more legitimate. For example, the camp site manager's claims can be considered more or less legitimate than the environmental protection issue. The arguments' legitimacy depends on the context and the participants. Thévenot, Moody and Lafaye (2000) compare arguments and modes of justification in the above road project in France and a river dam project in the United States. They show, for example, that market evaluations were common in the United States and were often combined with other sorts of evaluations such as civic arguments. Market arguments for the project were also used in France, but primarily came from Brussels and were seldom endorsed at the local level. Moreover, civic arguments were not combined with market arguments, but with planning arguments.

Defending interests in river basin management settings

The analysis of how knowledge is assembled within the justification regime takes into account the participants' moral capacities for defending common goods. Yet other capacities are deployed in discussions, such as strategic capacity. People implement intentions and use arguments to do so. Thus we should analyse the assembling of knowledge by connecting the actors' vision of "community" to the actors' interests (Moody and Thévenot 2000). Besides justification, people enter discussions to defend their interests in a pragmatic regime of "regular planned action". In dialogue settings, participants can be considered as "stakeholders" who implement intentions and consider objects as functional. The camp site manager who asked for help to avoid bankruptcy is using the advisory committee to protect his interests. Elected representatives defend their power against "civil servants". Salles et al. (1999) analyse farmers' strategies within water management settings. They study the integration of environmental norms in farming practices. They underline farmers' "strategic appropriation" of "agri-environmental" measures without real changes in practice. They identify four farmer strategies for entering the discussion in a strategic regime.

This regime of "regular planned action" leads to a second definition of the assembling of plurality: negotiating. Many authors have analysed negotiations for water management issues yelding proposals for designing negociation processes (Allain and Emerit 2003; Mermet 1998). The camp site owner quoted above is trying to adopt such a negotiated approach. His arguments aim at mixing interests, seeking some win-win solution through the assumption that an overarching shared interest for actors is the presence of tourists in the area. He could say: "I bear the physical cost of floods, so could other people please bear the financial cost ?". However, being in a repeated interaction series with the other participants, and notably the meeting chairman, their past relations are invited into this negotiation process (last sentence of the extract from the discussion above). The gentle reminders from the meeting chairman also help to reaffirm all the power relations, as well as any debts the camp owner might have.

This second point of view on the assembling of knowledge, then, paves the way for making use of the interactions among varied interests and enlarging the solution space in order to seek some win-win solutions.

Assembling knowledge without excluding knowledge difficult to express in public arenas

But there is more to the camp site manager's claim during the committee meeting than a mere attempt to defend his interests or justify the legitimacy of his claim. There is emotion. He is voicing his strong ties with his camp site, the long-standing relationship to this place, built through a lifetime of work. This kind of relationship with surroundings or people requires a different way of qualifying actions, other than as seeking to justify or achieve a goal. Thevenot proposes a third "pragmatic regime" of "familiarity" which depends on idiosyncratic linkages with a customised environment. It has to do with "perceptual and kinaesthetic clues about familiar and customised paths through local environments which involve modifying the surroundings, as well as the habits of the human body (...). The proper language to offer accounts of what happens is far from the formal statements offering justifications. It is highly indexical and gestural."(Thévenot 2000). How do people cope with such relationships in dialogue settings? They have first to cope with their attachments to the environment while participating, and then make people and things equivalent and general.

Doidy (2003) studies the difficulty of voicing this engagement with the environment in collective decision-making. He describes a "proximity" kind of knowledge through the relation between fishermen and the environment termed "water sense". He underlines the difficulties encountered when trying to "value" this "proximity" knowledge and relationship in public arenas. A farmer also points to this tension of getting others to understand his relationship to the environment, of rendering it general or equivalent to that of other people : "*You can't know what farming is if you haven't experienced it*". "Familiar engagement" is undermined by the process of making things public. The camp site manager fails to voice his personal relationship. We feel emotions but words do not come and the elected representative immediately moves the debate along toward collective issues. In our introductory example, the elected representative is sympathetic to the camp site manager's problems and responds by allowing him to make his claim general and available to a public assembly. But sometimes claims that fail to be shaped for the public can lead to tensions or even violence because certain voices cannot make themselves heard.

What place can be given to such personal ties and the proximity kind of knowledge? Is this only an individual interest, which has no place with respect to the general interest? Or is this a private issue which should not be treated in public places? This knowledge cannot only be considered as hidden information which the setting should reveal. The division between private and public does not hold, and shifts between forms of proximity and public stance should be considered seriously. While personal ties should not guide public decision-making, they should not be totally ignored either. From our analytical point of view, what happens in participative settings has to be looked at taking these personal ties into account, be they explicitly introduced or merely in the context. Actors cannot leave all their personal "equipment" at the door of the arena. They will thus use it in the collective decision-making process anyway.

Doidy calls for reflection on how environmental management settings can integrate this "proximity" type of knowledge and take it into account in the assembling plurality process. Many dialogue settings only accept knowledge shaped for the public, and above all scientific knowledge. Even if hybrid fora accept different categories of knowledge, these types of knowledge have to be understandable and thus translated for the public. The question of

allowing "proximity knowledge" and its translation still remains. We make the hypothesis that water management settings should allow personal knowledge and ties to enter the process and could even benefit from accommodating it. They should accept people with all their facets, and not only individuals defined as public, autonomous and responsible.

Shifting between different "pragmatic regimes"

Following a pragmatic stance, this paper studies how "participants" combine different forms of knowledge. We will focus neither on which arguments are considered more legitimate and fair, nor on how people negotiate and on power distribution. Here, we specifically focus our attention on the assembling of plural cognitive forms, from the most personal to the public. Finally we consider various forms of knowledge at three levels linked to the three pragmatic regimes presented: "familiarity", "regular planned action" and "justification". Are participants talking about what is common good for the river basin? Are they talking about different interests and negotiating? Or are they trying to voice something more personal? How do people deal with their attachments to their environment? How best to combine values, interests and ties for collective water management? Where are difficulties involved in the assembling ? And finally, how should a participative setting cope with this assembling of knowledge? Following the "pragmatic regimes" framework, we have observed people's shifts between different "pragmatic regimes of engagement" in various existing or experimental settings. We focus on the abilities required to shift from one pragmatic orientation to another, depending on arrangements specific to the situation.

2.   Summary of the case: Lentilla and Llech river basin

The case under study[3] here is the Lentilla and Llech river basin's collective management. The Lentilla and the Llech are two Mediterranean rivers in the south of France in the Catalan area. The river receives its water from Canigou, a famous Pyrenean mountain peak. The river basin covers 9000 ha. The climate is Mediterranean, characterised by acute scarcity of water during summer. In this season, demand for water resources is high and can lead to competition among different water uses, including farming, fishing and potable water.

Water sharing among stakeholders

During dry summers, farmers divert all of the water from the Lentilla to irrigation channels in order to irrigate their fields (mainly peach trees). Competition between water for drinking and water for farming has existed since the 1960s and competition with fishermen became conflictual a few years ago. For many actors, *the challenge is thus to ensure water during low water periods making it possible to answer the whole of the basin users' needs.*[4] The issue is then expressed in this context through a choice between water for farmers and water for fishermen.

Many water management participants agree on a plan to pump water dammed down river, to supply water to the river and satisfy all the demands. However, funding bodies (the French water agency and municipalities) make their funding dependent on a real collective and integrated management strategy and on the definition of a *low-water management plan*[5].

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[3] This description is based on 16 interviews and the observation of one meeting of the collective project management committee. Translations of French quotes from the case are the authors'.
[4] Authors' translation. Source: Feraud, Jacques, Chambre d'agriculture des Pyrénées Orientales. 2003. "Aménagement hydraulique du bassin de la Lentilla." 7p.
[5] "Protocole de Gestion des Etiages"

The first condition makes it necessary to consider all water issues, such as improving water quality and not only the summer scarcity issue. The second condition makes a public agreement necessary, whereas the existing political modalities of management are mainly of a community type and lean on interpersonal arrangements. When public meetings occur, their only aim is to announce public authorities' or elected representatives' decisions. The debate is hijacked into "partly private" settings where participants know each other and know they can agree. There is no public discussion. The challenge is to craft a water management setting to accommodate public debate about water sharing.

Here we see the necessity of assembling the multiple views and relations to the river basin. Actors view this plurality and shape it for the public through interest categories: for example, farming versus fishing. In the observed meeting, people were mainly in a "regular planned action" regime, and sometimes "justification". As the predominance of agricultural water use is being challenged by environmental issues and by the increased use of water for leisure activities, farmers have adopted a strategic attitude to maintain some power over water management and to be included among the planning group leaders (Salles et al. 1999). But the hierarchy of uses is never discussed publicly.

Approaching water issues through interest categories seems to be a dead end, as this viewpoint separates the categories, whereas this is not what the users themselves do. An elected representative told us: *"I conceal the farming issue. I speak less about it because I'm worried. It affects me"*. A teacher, president of a canal association also voiced her anxiety about the future: *"We own two uncultivated fields. We don't really know what we're going to do with them. I'd like to see trees on them again, as there were in the past. It's a pity to see things disappearing like that. But it could be argued that it's hard to make a living from it. I don't know how some people manage to make a living from it. That's why water for cultivated fields is a priority."* This person is not comparing farming with fishing, but rather heritage preservation with economic optimisation. She is comparing two criteria of evaluation. In the same way, we have attempted to identify water management "logics of evaluation" and to understand the assembling of knowledge through the "justification" approach, transversal to the interest approach. In the following sections, we describe the valley as seen from four viewpoints on the common good and present illustrative statements.

What is good for the Lentilla and Llech river basins ?

- The river is the heritage of the "barony"'s inhabitants'. Traditions and "patrimony" must be respected

> *"These century-old canals serve (…) patrimonial functions. They are witnesses to history and water culture"*

Very ancient irrigation canals cover the Lentilla and the Llech valleys. The canal in the downstream Lentilla Valley was created in 1282 and covers a territory still called "the barony" referring to the political organisation existing at that time. Rules for sharing water were locally defined. A long tradition of collective water sharing and management exists (Broc et al. 1992; Ruf 2000). Farmers' associations co-operate to manage the water, as well as water scarcity when it occurs. Conflicts over water have always existed and are solved by informal arrangement among representatives of the different users. For example, farmers and elected representatives phone each other when there is a lack of water. Sometimes the elected representative is a farmer himself. Many inhabitants also have family links and rural or farming origins. Water management based on strong social links has proved efficient in the

past, but today it is severely stretched as it is being required to integrate newly-affected people and newcomers.

- The river is a resource whose uses must be technically and economically optimised

> « *We have to recognise hydro-systems as natural capital generating services (…). It is necessary to make the value of the services visible, whether they are real or potential, then to compare them with the investment required to protect them.*" [6]

From a technical point of view, water management must be optimised. From the economic point of view, the valley has long been a farming valley. Since the creation of the canal and until a few years ago, farming developed on the "barony" while irrigation efficiency increased. Today, farmers are facing quality requirements and European farming competition. Tourism and leisure water uses are increasing and now compete with farming. Fields are sold to build houses. The farming population is decreasing. Pumping dammed water could facilitate economic development and needs to be evaluated both from a technical and from an economic point of view. The river basin needs economic development. Water is an economic good and represents major capital for the river basin through tourism, leisure and agriculture.

- The river is a common good which must be managed with respect to the public interest

> "*Water forms part of the national heritage (…) water use is everyone's right within the framework of the laws and regulations (…)."* [7]

An association of municipalities has led the pumping project since January 2005 to guarantee the respect of the public interest, whereas previously the project was led by fishermen and farmers. Solidarity and civic equality are major issues. The river is a space which should be shared by all. River basin management should respect water law and no longer wave the oldest rights like a banner. It should follow public opinion of the inhabitants of the river basin and downstream. Moreover, inhabitants should be citizens first, before being consumers or the valley's children. Canals are famous collective symbols of the Pyrénées Orientales region (French part of Catalunya).

- The river is alive and man should live in harmony with it by protecting the natural equilibrium and environmental beauty.

> "*The river shouldn't be mistaken for a duck pond. Here you are at the heart of nature. Nature needs to be respected. The fish is a noble creature.*"

The upstream part of the river is narrow and cliff-lined. It acts as a sanctuary for animals and fish, among them trout. The landscape is beautiful and wild, containing a Natura 2000 protection area. Downstream the river has been modified by human activity. Fish are endangered by pollution and water scarcity. The aquatic environment and non-human beings should be respected. Diversity needs to be preserved. Pumping water from the dam is "*tinkering*", "*heavily modifying*" and "*something which is not natural*".

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[6] Authors' translation source : Agence de l'eau Rhône-Méditerranée-Corse, and DIREN Rhône Alpes. 2003. "SDAGE RMC - Guide technique N°8 : eau et aménagement du territoire en RMC." Pp. 61.
[7] French water law, 1992, article 1

3.   Methodology: Using simulation games to study the assembling of knowledge in collective decision processes

Our aim was to understand in a given situation how certain actors act in response to specific events and how they try to combine multiple values, interests and personal ties. Given the theoretical framework presented above, we intended to test this framework and analyse behavioural patterns in participative water management settings. An approach based entirely on the observation of real participation settings would yield a thorough analysis of the diversity of sources of argumentation mobilised. However, some of the pragmatic regimes considered do not always appear explicitly. This means that they might be difficult to observe. An approach based only on observation would make it difficult to generate and to test how generic and relevant our framework is. Therefore we tried to vary inquiry methods (Cheyns 2005) and observation stance, adding on an experimental tool to investigate the assembling of plurality in controlled settings, in order to obtain information and to repeat scenarios for the sake of comparison. Besides interviews and meeting observations, we chose a companion modelling approach (Bousquet et al. 2002; Bousquet et al. 1999) implementing the use of a gaming artefact. The companion modelling approach is a framework specifying a stance of designing and using models in interaction with stakeholders. Important features of this approach are:

- This is a cyclic process iterating through the design of virtual worlds to represent the dynamics at stake, the joint exploration of these virtual worlds, and the elaboration of the consequences of this exploration for the real world (Etienne, 2009).
- Models are bound to be criticised and modified through their use or the use of their simulations with stakeholders. They are tools to obtain information and never an end product of the process. Here we consider a sociological model of collective discussion.

Companion modelling can be used for different purposes: research or collective decision-making support. This separation needs to be considered in the light of a primary objective in the design of a companion modelling process, according to which outcomes should be analysed and assessed. In all cases, the category which is not the primary objective appears to be a side effect of the process which should be taken into account: research in interaction with actors may induce changes in their community while collective decision support can lead to new knowledge on a system itself or on scientific questions. Here we encounter our first research objective since our purpose was to understand the assembling of plurality of "goods" in a collective decision process. Interviews and observation of meetings led to the design of a representation of a collective decision process where events require interactions concerning water management issues. This model, Concert'eau, is described fully in the next section. Interviews and observations formed the basis for contextualising the model and identifying key issues involved in assembling plurality.

The model was applied in an experimental setting, a role playing game (RPG). RPGs are group settings that determine the roles or behavioural patterns of players, as well as an imaginary context. A RPG is the performance of a roughly defined situation that involves people with given roles (Mucchielli 1983). Players can stand in another person's shoes and think hard about the roles of the other parties. Players genuinely use a RPG as a social laboratory. It is a way for them to experiment with a variety of ways of positioning themselves in a group with presumably few consequences in the real world (Innes and Boother 1999). At present, RPGs are used alone as training tools and are also becoming

scientific tools. As a group setting, they are suitable for negotiation or collective decision-making (Barreteau 2003). As training tools, they have already proven to be powerful in stimulating and supporting coherent group change (Tsuchiya 1998).

Experimental settings are not totally new in the social sciences. They are quite common in economics, where they usually implement a theoretical model to be tested with real economic agents in a very constrained framework. They are also common in management science through the implementation of policy exercises (Toth 1988). They have been inherited from war games and are aimed at putting participants in a context which could occur, making them react and interact among themselves through a simulation exercise and getting valuable feedback from their collective outcomes for their own practice. From a sociological analysis point of view, the purpose of the game is to provide elements of context to participants and analyse their reactions, with the assumption that these elements of context are the main drivers in the behavioural patterns in the game (Boltanski and Thévenot 1983). The aim of experimentalists using RPGs for this purpose is not to simulate reality. The game is a way to piece together a controlled complexity on which to work (Barreteau 2003). RPGs therefore provide a way to take into account the multiplication of decision centres within their setting: the distribution of decision-making processes among all players itself generates some complexity (Schelling 1961).

The assumption that the players' choices in the game are independant from their context in the real world has, however, been proved to be wrong in some cases (Daré 2005); when the game is known, for example, some players introduce strategic behaviours to lead the ex-post discussions in certain desired directions. The less the players are constrained through the rules of the games, the more they will find opportunities to invite real word issues into the game. In some cases this is even the purpose of the game (D'Aquino et al. 2003). These ad hoc behavioural patterns should therefore be analysed through debriefing sessions and interviews. The game provides a micro-world which can be analysed on the specific issues it has been designed for, with the double axes of validation of game-designer expectations and reactions of players according to their feelings in the game, as well as to their own experience of such collective decision processes in the real world.

4.   Concert'eau[8] : simulating collective assemblage of plurality

We based the design of the Concert'eau game on Eco-logiques (Germe and Thévenot 1996). Concert'eau's first step is similar to Eco-logiques': making the players aware of how people differ in the values and principles they defend, and not only in their interests. Moreover Eco-logiques aimed at analysing which arguments are considered to be most legitimate in collective discussion. Concert'eau is supposed to be a generic representation of a collective decision process, based on a deliberative mode or hybrid forum model, with contextual elements borrowed from the case studies and rough categories of argumentation which can be observed in the Llech and Lentilla basins. It aims at getting players to experiment with collective decision-making and to compromise between opposing justification-related arguments.

Presentation of the game

The game includes 8 players constituting 4 teams ("Do", "Ré", "Mi" and "Fa"). Each team is an inhabitant of the imaginary "four seasons' valley". There is a collective discussion table at

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[8] Concert'eau means collective discussion ("concertation" in French) about water ("eau") but it also evokes music and the difficulties involved in composing a good piece.

the centre of the room and inhabitants' "houses": a two-person table for each team at the 4 corners of the room.

Viewing participant differences through various criteria of common evaluation

The four "orders of worth" for water management described above (part 2) form 4 "departure cards" given to each two-player team. This card presents the logic of evaluation they will have to defend when facing events and when needing to make compromises with other teams. In this way, we lead players into a position where they have to promote an "orders of worth" for water management and to categorise issues through this very rationale : green "order of worth" ("Fa" team), patrimonial or domestic "order of worth" ("Do" team), market and industrial "order of worth" ("Ré" team) and civic and fame "order of worth" ("Mi" team). Departure cards which define players' roles are an incentive to shift to the justification pragmatic regime. The aim is to make people grasp how participants differ, using various criteria of common evaluation. In so doing, Concert'eau aims to get people to shift from an a priori strategic engagement in collective discussion to a justification regime.

First step: Familiarising players with their role and with that of the others

Teams' roles are only defined as those of inhabitants who have to defend the principle featured in their departure card. In the first step, we give each team 34 cards including photos, extracts from interviews (such as those chosen to illustrate river basin goods above), or extracts from documents generated from interviews on the case. They provide information according to 3 formats. Teams go to their "house" and choose from the 34 cards the 6 which in their opinion are the best "match" for their departure card. They have 20 minutes for this. In the following step they present these chosen cards to the other teams, and discuss the cards chosen collectively. The facilitator points out when cards are chosen by two or more teams, showing the possibility of agreement but also trying to make explicit the reasons for this choice by each team. In this step, players in each team are embodying "Do", "Ré" "Mi" and "Fa", giving them some life. They are crafting their role on the basis of their own experience of dialogue settings for water management issues.

Second step: making compromises

The context is a collective meeting where players discuss how to react to events concerning some aspects of water management that they are jointly facing. They are asked to reach a compromise. Players are incited to reach a compromise through the assurance that their proposals are likely to be taken into account provided they result from a consensus: when there is agreement, the facilitator will inform an imaginary authority so that it can be taken into account in public decision. The game's facilitator chooses the events' progression according to previous discussion of events so as to create problems for the players, thus encouraging them to experiment with the difficulties of combining plurality. For each "event", each team has to give its own opinion. Team members can build their opinion during a 5-minute team discussion in their "house". They then come back to the collective table and have 10 minutes to discuss and reach a compromise with other teams. The game facilitator helps teams to write down the compromise. The teams can then sign it if they still agree.

Presenting events so as to provide various formats of information

Events are short texts (around 150 words) written on a sheet of paper. For example, a retired farmer plans to sell his land to an external investor who wants to build a large tourist resort. Events are written to provide elements from diverse formats of information (Thevenot, 2004),

as the 34 cards did. They give information linked to the 4 teams' rationale through inhabitants' reactions: "Mr. Dupatelin is happy because his son may be able to find a job in the resort. Mr Dusouci worries about water provision and environmental balance." They also provide elements refering to proximity regimes. Each team receives the same event card, but one of them gets a slightly modified one: for the same event, this team's card introduces a reference to some personal ties. In one event for example, the nephew of a green team member pollutes the river, whereas for the 3 other teams it is an anonymous cattle farmer who pollutes. In another event the "Ré" team's own property is flooded, while for the others it is the property of an anonymous inhabitant that is flooded.

A few contextual descriptions
During the game session, we describe the context of the collective discussion very roughly: we give information neither on the public authority and status of the collective meeting, nor on any social or professional status of the players. Player roles are described very roughly. Players are inhabitants with a departure card but without professions or interests to defend. They are all considered equal except for their justification principle.They are inhabitants and not just disembodied principles, meaning that defending goods other than common goods is possible. But they are defined only as inhabitants, in order to limit elements which could favour strategic behaviours. Even though this strategic behaviour is one of the regimes of the theoretical framework presented in the first section, a strong orientation towards this behaviour was observed in the first test of the game. Players tried to embody themselves in a socio-professional category which they considered as the clearest archetype : farmers, fishermen. When they had adopted their representation of this archetype, they attempted to defend its interests.

Finally, limiting the information available leads the players to ask for further elements of context or to import them from their experience, in order to act in the game. The observation of these additions provided insights into what is required for hybridation to take place in dialogue settings and what information and guarantees participants need before they commit to the collective discussion..

Third step: debriefing

After 3 or 4 events, players are asked to step back into their "own shoes" and to leave their "Do", "Ré", "Mi" or "Fa" shoes. The game facilitator's job is over; the game observer shifts to being the debriefing facilitator. The debriefing discussion deals with the participants' feelings during the game and provides a return to reality. It is organised arround the following questions:
  - How did you feel during the game? Did you feel at ease? What difficulties did you encounter during the game?
  - During the events who do you think you were? Where do you think you were?
  - If you played the game again, would you play the same way?
  - Do you think what happened in the game could happen in reality?
One or two months after the game, an individual debriefing takes place with some players, in line with observations during the game.

This game does not aim to get people to change their values or analyse such changes, as in (Kergreis 2004), or analyse which arguments are considered most legitimate. Nor does it aim to analyse strategies in negociation situations, but rather to allow people to experience the difficulties of combining differing, but potentially equally legitimate, values and other goods involved in the game. Its objective is to subject the players to the tensions encountered when plurality needs to be combined, a major challenge of democracy.

First results of the game tests

Three tests were carried out involving students and colleagues (engineers and scientists from different disciplinary backgrounds). We present the results here before drawing hypotheses in the next section, in the prospect of a game session with real stakeholders.

Difficulty of embodying values and shifts in socio-professional classes:

During the test many players underlined the difficulties they had embodying the principles, and even expressed some inability to do so. A player from the "Mi" team said: « *We are elected representatives… In fact, we are trying to translate our management principle. It's easier to reason following an archetypal figure than following a management principle*». Many players felt troubled by having no information on the stake they hold or their profession: "*Each of us is necessarily a representative of something while events occur*". Players who defined their role as stakeholders defending an interest ("*I play chess*") were the most uncomfortable. The potential for each regime to occur differed among participants. Some claimed that they could not compromise with principles "*the problem is that you cannot negotiate or compromise with principles. A principle is a principle. To make compromises you need to get beyond principles. Principles involve intellectualising, and people are not that intellectual*". This player doubts people's capacity to talk about principles. Concert'eau assumes the need and the capacity to talk at the three different levels: interests, values and proximity.

Players contributed to the game and to their role. They specified their roles so that they were easier to embody. Faced with events, players quickly switched from values to socio-professional classes and identified groups. They used what they thought were categories of water management: participant "Fa" was named "*radical-ecologist*" or "*environmentalist association*". In the same way, "Mi" was named "*civil service*" (« *l'administration* »), "*mayor*", "*elected representative*" or "*public authorities*". "Do" was named "*farmer*", "*traditional farmer*", "*old person*" or "*retired mayor*". "Ré" was named "*hotel-keeper*", "*intensive farmer*" ("FNSEA"), "*developer*" or "*planning officer*". The causal link between events favours the maintenance of the role embodied as a farmer.

Teams had different degrees of difficulty remaining in the justification regime. The "Do" team, which was the domestic one, easily embodied a "farmer" and scarcely acted in a justification regime. In tests 1 and 3, some players embodied stakeholders and could not go back to the justification regime. They stuck to defending their interests and attracted the other teams to that way of engaging with the situation. Then other teams defended interests or remained silent, as "Mi" did in test 3. "Fa" easily stayed within a regime of justification. The name other players gave favours this regime. But as green good is today expressed in public spaces, people experienced no difficulty with this regime (except if it was too far opposed to their own thinking). "Mi" was also forced to stay in the regime of justification because of the imaginary authority, represented by the game facilitator. "Mi" could not embody a representative of public interests.

Different ways of dealing with proximity ties

"Do" team players never noticed when they had the "personal event" (A cousin wants to sell his property for a big tourist resort.). At the same time "Do" never felt uncomfortable. In the 3 test sessions, they had no difficulty speaking about personal ties. When facing the "Do" players, other teams' players felt obliged to use personal arguments to prove that they "knew" the river basin. One "Ré" player said: ""*Do" played on the local ties. So we were all obliged,*

at one time or another, if we wanted to be listened to, to put forward our ties. I had to say I had 5 children." In the 3rd session, "Do" said: *"We thought that the "Mi" players were strangers to the river basin"* underlining the difficulty the "Mi" team encountered moving beyond principles. A "Do" player asked other teams to prove their proximity knowledge of the river basin.

In contrast, other teams felt uncomfortable when confronted with personal arguments in the first step of the game involving personal testimony and later involving the "personal event". Various reactions were observable. During the events, the family or personal link was not used in the same way by all the teams. The two members of a given team sometimes disagreed on the position to adopt. In the 2nd test, one player from team "Fa", who appeared to be a leader during the second event discussion, spoke little during the third event discussion involving his nephew. His partner revealed the personal link at the end of the discussion when all the teams had reached agreement. In the 3rd test, "Mi" decided to conceal personal links to a canoe renter involved in one of the events. They excluded this fact from the discussion and criticised those who took into account this category of relationship in the public space. A "Mi" player said: *"When you ("Fa") defended your nephew, I felt it was contradictory to your environmentalist role. I don't know if it's right. Should your family ties come before team principles?"*. For him the collective is more important than the individual, individual interests and personal matters should not appear in public spaces. In another test session, faced with the nephew polluting the river, "Fa" expressed unease at the collective table. In the 3 tests, the nephew's polluting behaviour forced the team to shift from the justification regime, because they felt it was intolerable to maintain a strong position of environmental defence. This shift facilitated the compromise. But the two players of the Fa team disagreed. One of them stressed the necessity of using such arguments because personal links should facilitate a fair solution due to information transparency. Another one *"trying to think according to an environmentalist family philosophy"* told other players: *"My nephew cannot be polluting, he must be an environmentalist."*

5.   Discussion and perspectives

Participants' roles in water management settings

According to preliminary experiments, Concert'eau provided answers to the following questions : How do people act in collective discussion situations? What are they expecting from other participants? These questions concern the roles of participants in water management settings. The role is a key sociological concept, which links individuals and institutions. The first meaning of role is normative : a social constraint. It is a set of normative expectations attached to a social position. But people distance themselves from their role and may have several roles. Goffman (1991) makes a careful distinction between "typical role", "the normative aspects of role", and a "particular individual's actual role performance". Role in the normative sense is to be distinguished from role performance or role enactment, which is the actual conduct of a particular individual while on duty in his or her position. Typical dimension means expectations of a role such as the set of socially agreed-upon assumptions about the behaviour of people in certain social situations. It deals with the representation of the social world and with its division into groups and classes.

Concert'eau allows the performance process to be observed and reveals preconceived opinions. The normative dimension is specified in the game's rules. "Typical roles" appear during games, such as an environmental association or a traditional farmer. Finally, players' roles are crafted during interaction. The limited descriptions of the context and of the role

make players fulfil their role and embody it. Debriefing gathers information on the "types" handled and the role's embodiment. We use questions such as: "Where do you think you were?" "Who you think the other players were?" to link the situation and the "types" handled. The 3 tests showed that players were at ease with some socio-professional "types" and uncomfortable with the role-principles proposed in the departure cards. Socio-professional classes appear to be roles with associated normative constraints that are well known, or supposed to be, by the players.

The theoretical framework presented in section 1 proposes categories to describe role design from a different viewpoint: one participant may expect another to be a stakeholder, a close relative or friend or a person with different values. Some players expected others to be mainly stakeholders and found it difficult to talk about values. This is in line with the results of Kergreis (2004) who carried out experiments comparing various evaluative and descriptive pieces of knowledge of field boundaries between farming students and environment students. She analyses the conflict between "fact norms" (practices) and "injunctive norms" during periods of social change. She observes that participants in these experiments stick to the identity of their social group and that no discussion on values occurs. She compares experiments to real collective discussions and points out that there is no real collective discussion or questioning of participants' values in both cases. The use of Concert'eau provides insights into expectations of participants and critical feedback on the framing induced by participatory settings.

Proximity knowledge and deliberative model

Concert'eau also addresses the issue of including what we name "proximity goods" in the assembling of plurality for a collective decision. A deliberative model assumes decision fairness requires publicness. A public or private categorisation would lead to proximity being treated as a black box. This in turn would lead to pushing proximity knowledge out of the public space. We prefer to consider a continuum from proximity to public stances and study the tension involved in moving from one to another. Dialogue settings may pave a two-way road from proximity to publicness. The three tests showed players had various ways of taking into account personal elements in the assembling of plurality. We assume that three factors influenced the way that people take into account personal elements: the game departure card, perceptions of the place embodied by the collective table in the game, and the players' own political experience of public debate.

It seemed easier for "Do" teams to take proximity knowledge and ties into account. We make the assumption that difficulties in integrating proximity knowledge depend on game departure cards or on "orders of worth". A domestic "order of worth" makes personal ties general through fraternity. It is a common good built to protect personal ties. This facility sometimes paves the way for criticism of "paternalism". People also find a way toward other common evaluative criteria to value proximity knowledge. Doidy (2003) for example studies the collaboration between fishermen and ecologists using fishermen's knowledge through "water sense" as arguments for public debate. They make general arguments from other orders of justification than the domestic, such as the green.

We argue that the context of the assembling process influences the way people take into account proximity knowledge. In the debriefing, we were able to specify how people considered the game setting (publicness of the place…). In the test sessions, several players felt uncomfortable because they had no clear representation of what this situation was supposed to be. The simulated dialogue setting was understood as a local water commission

assembly or an advisory committee. This representation of the situation influenced the way that they actually allowed proximity knowledge to be voiced.

Players' differing ability to bring proximity knowledge into public depends on various political models. A "Fa" player in one session used the community solution by claiming his nephew couldn't be polluting because it was not in his family philosophy. A "Mi" player in the same session stated that "*private concerns should not be invited into the debate*", which means that proximity knowledge is not suitable for public discussions. Whereas Test 1's "Fa" players or Test 2's "Mi" players spoke first in the event discussion, directly and publicly expressing their embarrassment over their relatives' action. Discussions among players of the same team about what to do with the "personal event" provide material for the study and comparison of peoples' ability to make proximity general and their political means of doing so.

Perspectives

The Concert'eau role-playing game is designed as a collective discussion model and experimental tool to gain insights into how people act in collective decision processes: it leads participants to implement justification principles in their behaviour. This tool has notably raised the issue of how participants expect and "perform" roles in collective discussions about water issues and their preconceived opinions about other participants. Three tests with Concert'eau showed that players felt uncomfortable with the roles or principles proposed in the departure cards, while they felt at ease with some "typical roles" in the water field : categories of users like farmers or fishermen. The issue of shifting to proximity appeared a tricky one in the experiments.

The specific uses of Concert'eau and its working hypotheses can be reconsidered when playing it with people who have real interests and attachments to the river basin. For the 3 tests with students and colleagues, Concert'eau was only an experimental setting. On the Lentilla and the Llech, Concert'eau provided an additional piece of the water collective dialogue setting, since crafting a new river basin collective institution is envisaged with publicness and participative issues[9]. Findings from the three test sessions, could constitute useful input when collaborative water management settings are being designed. Tackling the role issue on the one hand and the proximity issue on the other hand could provide insights into the following questions: What normative role and condition can each piece of the setting propose to participants? Roles could be defined with reference to the three levels: principles, interests and personal ties. How could the setting favour shifts between proximity and public stances ? Beuret and Doidy (2001) pave the way to answering this second question. For example, they point out the role of mediators as links ("passerelles") to bridge the gap between proximity and public. In practice, this means, for example, employing facilitators for river basin organisations, as observed from other case studies (Richard-Ferroudji, 2008a).

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[9] Tests with Llech-and-Lentilla-water-affected people were carried out and resulted in a revision of initial questions presented in this chapter for further use in the field. See Richard-Ferroudji, 2008b

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