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A theoretical and methodological approach to the study of water culture

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Summary. In spite of the particular perception that people may have about water use, from a theoretical standpoint water can be conceived of as a *public good* given that it fulfils two criteria: a) water is supplied to all consumers and no one can be excluded from using it; and b) what one person consumes under normal conditions of supply reduces the possibilities of another using it. The results of a survey conducted by the IESA-CSIC (2000) of people in Andalusia are presented in order to shed further light on the above analytical . The survey has shown that Andalusians are concerned about the problem of water in their region, but that they perceive the problem as being more serious than the actual effects it has on the population. In other words, water is perceived as being a problem in Andalusia, but people do not actually experience the problem at the local or household level

Keywords. Public good - Water debate - Andalusia - Water dimensions

Approche théorique et méthodologique pour l'étude de la culture de l'eau

Résumé. En dépit de la perception que les gens peuvent avoir de l'eau, d'un point de vue théorique, elle peut être conçue comme un bien public, étant donné deux critères : (a) l'eau est fournie à tous les consommateurs et personne ne peut être exclu de son utilisation, (b) ce que consomme une personne dans des conditions normales d'approvisionnement réduit les possibilités d'utilisation des autres. Les résultats d'une enquête menée par l'IESA-CSIC (2000) sur la population en Andalousie sont présentés dans le but d'informer cette analyse. L'enquête a montré que les Andalous sont préoccupés par le problème de l'eau dans leur région, mais qu'ils le perçoivent comme étant plus grave que les effets réels qu'il a sur les populations ; en d'autres termes : l'eau est perçue comme étant un problème de l'Andalousie, mais les gens ne conçoivent pas ce problème à l'échelle locale ou au niveau des ménages.

Mots-clés. Bien public - Débat de l'eau - Andalousie - Dimensions de l'eau

I - Introduction

In spite of the particular perception that people may have about water use, from a theoretical standpoint water can be conceived of as a *public good* given that it fulfils two criteria: a) water is supplied to all consumers and no one can be excluded from using it; and b) what one person consumes under normal conditions of supply reduces the possibilities of another using it.

Whether considered at the level of social perception or from an objective perspective, issues related to water consumption are the focus of public debate and controversy, particularly during times of scarcity such as periods of drought. Furthermore, the partial or total privatization of water resources has begun to occupy recently the public agendas of many governments, so that water resources are increasingly being viewed from a market-oriented perspective too.

Thus from either a theoretical approach or through an analysis of the social and political reality, water is an issue of public debate about which people express their opinions, hold certain beliefs and attitudes and behave in a particular way, leading to a variety of *cultures* regarding the use and consumption of water resources. For this reason it is necessary to examine the issue of water theoretically in terms of "political culture"; an approach that explores citizens' orientations as the result of a set of attitudes, beliefs, values, knowledge and behavior. As regards issues related

to *water culture*, this theoretical approach allows us to classify citizens' orientations into the four following categories or analytical dimensions:

- *Affective dimension*. This dimension includes the feelings people express about the consumption and distribution of water (for example, the perception of whether there is a problem of water scarcity or not, beliefs about the causes for water shortages, views about inefficient water use, etc.).
- *Cognitive dimension*. This dimension has to do with the level of knowledge people have about issues related to the water cycle and the players (individuals, groups and institutions) that use and consume water resources.
- *Conative dimension*. This refers to the degree to which people approve or disapprove of measures to regulate water management and distribution (water rates, assessing priorities in times of scarcity, management schemes, and financial resources for investments in infrastructures, policies to increase water supply or reduce demand, etc...).
- *Active dimension (or behavioral dimension)*. This refers to how both individuals and groups of citizens behave with regard to water consumption.

Studies that have been conducted on this topic attempt to determine the relationships that exist between these four dimensions in order to draw useful conclusions for designing public policies aimed at managing water consumption and distribution.

Yet the water debate cannot be carried out in an abstract context as citizens' opinions and beliefs regarding water and the problems arising from it have to do with very specific issues. Although these issues may vary from one geographical area to another, they generally revolve around the following questions:

- Water rights and management schemes (public, private, joint)
- Level of water provision (consumption) and the criteria for distributing water among different groups of users.
- The cost of water (criteria to calculate how much users must pay for water).

The analysis of *water culture* therefore has as its aim to determine how the water debate is formulated among the population and what the most relevant explanatory factor is in that debate. In short, our aim is to determine if the debate is articulated around sentiments (feelings), beliefs and values (affective dimension); around preferences regarding policies to regulate water consumption (conative dimension), around citizens' behavior regarding water use (active dimension), or if it is a combination of all three dimensions; while at the same time attempting to account for the influence of knowledge on all three (cognitive dimension) (**Tab. 1**).

Table 1. The water debate: dimensions and issues.

Dimension	Issue
Affective dimension	<ul style="list-style-type: none"> • Degree to which users perceive of water as being a public or private good and approve of water management schemes. • Perception of the severity of the water problem. • Belief about the causes for the water problem. • Opinions on inefficient water use.
Cognitive dimension	<ul style="list-style-type: none"> ○ Knowledge about local water management schemes. ○ Knowledge about organizations that have jurisdiction in water-related matters. ○ Knowledge about groups of players involved in the water sector (irrigation communities, hydrographic confederations, etc.). ○ Knowledge about the water cycle.
Conative dimension	<ul style="list-style-type: none"> ▪ Degree to which users approve of the criteria for allocating water in times of scarcity. ▪ Degree to which users approve of possible measures to reduce water demand. ▪ Degree to which users approve of possible measures to increase water supply: building reservoirs, water treatment plants, transfers, etc. ▪ Degree to which users approve of new water pricing schemes. ▪ Opinions about investments in infrastructures. ▪ Opinions about the transfer of water between regions.
Active dimension (behavior)	<ul style="list-style-type: none"> ➤ How individuals behave differently with regard to water use. ➤ Membership in or tendency to belong to the associational movement.

Yet the intensity of the water debate, as well as the positions held by citizens regarding it, depend on a variety of factors. These include *socio-structural* factors (type of user, type of activity, type of business, family income, and type of household), *socio-demographic* factors (age, sex), *cultural* factors (educational level, value systems) and *contextual* factors (low, medium or severe water scarcity). Clearly, the positions held by the various players involved in the water debate will differ depending on these variables, which will be examined independently in our analysis.

As regards factors of the socio-structural type, the position taken by people will depend on what water consumption and water use means to them. Here two broad groups of citizens can be differentiated according to type of consumption:

- *Productive consumers*. These are users for whom water is an essential factor of production (farmers, industries) and for whom consumption responds to an instrumental rationale based on the possible productive income to be gained from the resource.
- *Domestic consumers*. For this group of citizens, the amount of water needed is determined by specific cultural patterns in such a way that water consumption is based on an expressive rather than an instrumental rationale.

Yet not all productive consumers nor all domestic consumers are the same. Indeed, different subtypes of consumers can be distinguished within each of these groups according to their type of activity, income level, occupation, household installations, age, sex and educational level.

For example, the position held by productive consumers in the water debate will vary according to the role that water plays in production. While water is a fundamental factor of production for farmers with irrigated farms, a distinction must be made within this group between farmers who

have access to water through a collective concession (for instance those belonging to an irrigation community) and those who do so through a private concession (for example, by means of wells). Their preferences regarding priorities of use or levels of provision, as well as individual behavior (saving) and collective behavior (actions to coordinate consumption) will differ in each case.

As regards domestic consumers, individuals' social position will have a significant influence on their values, attitudes and behavior with respect to the water issue. Indeed, public opinion studies differentiate between two large groups according to their social status. One of these groups occupies what could be called the *social centre*. This group encompasses people that occupy the highest rungs of the social ladder, that is, those who have greater resources in economic (i.e. income) or cultural and symbolic (i.e. educational level, training) terms. The other group occupies the *social periphery* and comprises people with lower economic resources (i.e. less income, lower education levels). In general, people who belong to the *social centre* have a higher tendency to voice their opinions and participate in the public debate on certain issues. These are people who have also developed post-materialistic values (centered on improving their quality of life and protecting the environment) and are more involved in associations and engage in collective behavior. Thus we can expect different attitudes towards the water debate among people belonging to the *centre* and those belonging to the *periphery* of the social structure.

Finally, it is important to highlight how people's values, beliefs, attitudes and behaviors regarding the issue of water use and consumption may be conditioned by the *context* in which they live. When dealing with an issue such as water – which is largely influenced by factors related to the natural and climatic conditions of a given territory, how public authorities manage water or by the different uses to which water is put – it is to be expected that people will react according to their own particular situation. For this reason it is necessary to include situational variables such as the type and size of habitat or the fact that people live or have lived under conditions of normal or restricted (drought) supply when analyzing water culture.

In short, the analysis of people's orientations regarding the water debate must be conducted from both a *socio-demographic approach* (taking into account the influence of such variables as sex, age or type of family); a *socio-structural approach* (accounting for individual's social and economic status including income level, occupation, activity or household installations); a *culturalist approach* (which attends to norms and value systems) and a *situational approach* (which takes into account the habitat and situations of normal supply or scarcity) (**Tab. 2**).

Table 2. Independent variables.

Approach	Productive consumers	Domestic consumers
Socio-demographic approach	Sex, age, educational level.	Sex, age, educational level.
	Type of family.	Type of family.
	Type of activity.	Occupation.
Socio-structural approach	Size and type of exploitation.	Income level.
	Social position (occupation, income, etc.).	Type of household.
Culturalist approach	Basic normative orientations:	
	Materialism vs. Post-materialism.	
Situational approach	Type and size of habitat.	
	Normal access to water resources.	
	Water restrictions or scarcity.	

II - General analysis of the results

In this section the results of a survey conducted by the IESA-CSIC (2000) of people in Andalusia are presented in order to shed further light on the above analytical analysis.

1. The majority of the population in Andalusia is aware of the water problem affecting the region, placing the highest priority for use on domestic consumption, followed closely behind by agricultural consumption in times of both normal supply and periods of drought and restrictions. Trailing far behind on the list of priorities is a second group which includes the allocation of water for industry and the production of energy, while tourism and recreational uses fall at the bottom of the list. These priorities remain largely the same when accounting for variables such as age, educational level or ideology. Although differences can be found in the case of size and type of habitat, it is the specific weight of each of these uses and not the order of priority that changes.
2. While there is strong consensus among Andalusians as to the existence of a serious water problem in the region, paradoxically this is not the case when assessing the problem at the local level. This would seem to suggest that the notion of a general water problem in Andalusia is more a *social construct* than an objective reality perceived as such by people in their daily life. Significant differences can be observed in specific areas (such as the province of Almeria) or in situations where people remembered having suffered water restrictions. In line with this, Andalusians believe that the problem of supply in times of scarcity has not been resolved in the region and chiefly blame the lack or deficiency of hydraulic infrastructures for this problem. Few believe that the problem is due to the excessive demand for water by different consumers (either domestic or productive). Thus the most commonly demanded solutions are those aimed at increasing water supply through investments in infrastructures (the construction of reservoirs and dams).
3. With regard to the kind of water management, there is a dominant state-oriented discourse (which is not influenced by ideology) in which water is perceived as a good that should be managed by the State. As the size of the habitat increases, support for joint public-private ventures with the participation of water companies becomes more common, although this trend is somewhat less marked in areas with more than 100,000 inhabitants.
4. As regards the billing of water, an ample majority believe that water rates should be established on the basis of household consumption, while a minority thinks that consumers should be charged according to their income. Very few differences are found in this regard according to age, educational level or habitat, although respondents who declare themselves to be on the left of the ideological scale hold a different position than the majority. In terms of productive consumption, there is a slight increase of those who support the application of an income-based price scale. These responses suggest that Andalusians do not consider water to be a costly resource that adversely affects family income and therefore do not believe that it is necessary to apply redistributive criteria to fund water consumption.
5. With regard to the allocation of water in times of scarcity, the respondents unanimously agree that priority should be given to household supply over other uses. In terms of productive consumers, the respondents believe that priority should be given to farmers rather than industry or the service sector. As concerns the distribution of water to farmers, Andalusians are equally divided among those who favor the so-called "social distribution of water" (supplying water to small farms and penalizing economically sounder farms) and those who oppose this measure.
6. As regards practices that are considered "bad", the Andalusians show greater indignation about those having to do with water quality (contamination due to fertilizers, the spillage of waste water into rivers, etc.) than those affecting water availability (extracting water

from wells without permits, storing water in times of restrictions). It would seem that Andalusians justify bad practices that they are more accustomed to; but become indignant about practices that are more “foreign” to them (it is not “us” that does it, but “them”).

7. Andalusians have little information about general issues related to water. Significant differences were not observed between such variables as educational level; a variable which usually has a strong influence on cognitive issues. This suggests that more well-educated Andalusians are unfamiliar with aspects related to the water cycle or the institutions that manage water resources. Indeed, a large percentage (nearly half) believes that the Regional Government of Andalusia has jurisdiction over water. Consumers are more knowledgeable about specific issues that affect them more directly (for example, local water management schemes or water rates). However, this is not due to their educational level, but to situational variables such as type and size of habitat (consumers are better informed about specific aspects related to agriculture in dry land and irrigated areas, while people who reside in small towns are more knowledgeable about aspects related to water management schemes).
8. In accordance with the widespread perception that the water problem in Andalusia has chiefly to do with supply, Andalusians largely approve of measures to increase water availability – particularly the construction of reservoirs and dams – and support technological solutions such as transfers and desalination or water treatment plants. In fact, an overwhelming majority is in favor of the State providing the necessary financial resources for infrastructures. Although few support palliative measures to reduce water consumption (raising water rates) or to prevent shortages (reducing the irrigated surface area), many are in favor of measures that would not have a negative effect on the population such as training courses or awareness campaigns.

In short, the survey has shown that Andalusians are concerned about the problem of water in their region, but that they perceive the problem as being more serious than the actual effects it has on the population. In other words, water is perceived as being a problem in Andalusia, but people do not actually experience the problem at the local or household level. In spite of the fact that Andalusians acknowledge that much improvement has been made over the past, it would seem that Andalusia's history as a dry region with severe water problems continues to be present at the discourse level. The Andalusians are poorly informed about aspects related to water, especially those having to do with the water cycle; a fact that must be taken into account in regional government policies on environmental education. If action is not taken in the educational sphere (actions which should differ according to the type of consumer), the Regional Government of Andalusia will be hard put to gain society's support for integrated policies designed to deal with the problem; policies which must be designed within the framework of sustainable development and take into account not only supply, but also demand.