How do consumers perceive water quality? Example of an anthropological study carried out in Paris

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Abstract Observation of quality standards is the prime concern of water producers, but are the quality criteria used by professionals the same as those of consumers? How do consumers perceive the quality of the water distributed to their homes? The main concern of SAGEP, water producer for the City of Paris, is to respond at all times to users’ expectations. To answer that requirement, SAGEP launched a consumer study on the reaction to tap water.

Analysis of the perceptions of water quality is presented in this paper. It reveals multiple and singular responses, which themselves depend on personal history and development of the individual concerned. An anthropological approach enables one to gain a grasp of the degree to which the diversity of perception comes into play in the day-to-day practice in the domestic environment of tap water. The example of consumer practice in regard to the type of water drunk demonstrates how custom changes with the context and how each person builds up confidence in tap water.

The complexity of what are a priori trivial uses confirms the need for water producers and distributors to make this reality an integral part of their overall management. They should now take into account, perhaps in a different way, the consumers’ expectations.

Keywords Behaviour; confidence; consumer; perception; practice; quality

Introduction
SAGEP, the water producer for the City of Paris and, as such, responsible for its quality, has no direct contacts with Parisians since it sells its water to two companies to which has been assigned the task of distribution to consumers. However, despite the fact that it does not enjoy a privileged relationship with the users of the water it produces, SAGEP is nevertheless acutely aware of their expectations. It was thus that it entrusted us with a research project that forms part of a doctoral thesis in partnership with the Laboratoire Techniques, Territoire et Sociétés (LATTs) of the Ecole Nationale des Ponts et Chaussées (ENPC). The aim of this study is to achieve a greater understanding of the perceptions, practices and behaviour of Parisians when they use tap home water. We have adopted an anthropological approach in the conduct of the qualitative studies carried out in households. Individual experience, social, economic and cultural origins, just as much as the environment in which everyone lives do indeed play an important role in individual behaviour and the practices of daily life. This approach offers a fresh vision of water users while revealing the complexity of the relations each individual entertains with the element, the diversity of the perceptions of water and the specific uses to which it is put.

A knowledge of how consumers perceive the water distributed to their place of residence is indispensable nowadays for all those responsible for water production and distribution. As we shall see, the demands in respect of quality on the part of the consumer, i.e. the end-user, differ on occasion from those of the producers.

Regarding the quality of the water distributed to Parisians
Facing strict quality requirements, water producers are developing increasingly sophisticated tools in water research that will meet the physico-chemical and microbiological quality criteria compliant with existing domestic regulations.
If it is to be declared fit for drinking, the water must effectively respect the quality parameters defined by France which are more strict than the European legal quality levels. Observance of these standards is subject to strict and frequent monitoring by the health authorities who carry out regular samplings and analyses throughout the distribution cycle. The capital of France, with its 3.5 million users, is supplied by spring and river waters. The mineral composition of Paris water is balanced out, to have a neutral taste appreciated by the inhabitants of the city. The latter continue to be sensitive to variations in taste linked for example to a slight increase in residual chlorine.

The water distributed in Paris is of irreproachable sanitary quality (99% of the 5,000 samples taken in the year 2000 complied with existing legislation in France). On the other hand, it is not because water is officially qualified as fit for drinking or in compliance with the law that consumers perceive or appreciate it according to the same criteria. Then, they adopt it unhesitatingly for all uses, whether these involve personal hygiene, washing of clothes or cooking and drinking.

How do consumers perceive the quality of the water coming out of their tap?
When the Parisian consumer turns on his tap, he thinks it normal, natural and indeed his right to enjoy the benefits of abundant, good-quality water – despite the fact that, generally speaking, he is unaware of its mineral composition, its provenance or indeed its price. He seldom asks himself questions about this same water which he looks on unconsciously as an object in daily use and which will react to automatic gestures.

Now it often happens that when the water coming out of the tap is “no longer the same” that the user all of a sudden becomes aware of his ignorance in regard to this element. This water becomes distinctly less ordinary and reassumes strong symbolic values. Pure water, healthy water, water fit for drinking… is it not a fact that each individual has a personal perception of this element?

When one speaks of pure water, everyone has his own particular way of defining it. The person possessing a scientific background, for example, often defines pure water according to chemical properties. There are others who take the view that it has to be filtered, treated, de-mineralized, or again bacteria- or mineral-free to enjoy this status. Besides, “the fact that it was treated means that it wasn’t any good!” While some will say that such things do not exist, for others it is in the heart of a still-virgin environment of mountains and glaciers, untouched by any human activities, that it acquires its authentic purity. Inasmuch as it descends from heaven, the perception of purity is augmented by strong symbolic and religious values.

By means of these particular and multiple perceptions, each person constructs his markers so as to distinguish the good from the bad, the pure from the impure. In the words of the philosopher Gaston Bachelard, “One cannot deposit the ideal of purity just anywhere, in any material. (…) Clear water is a constant temptation for the facile symbolism of purity,” (Bachelard, 1942). Unsullied by any foreign body, it is clear, transparent and even “when one looks into its very founded heart, it has something of the crystal about it” as a young girl said. It is described as clean, good or fit to drink when it is unpolluted, free of waste, odorless and free of any unpleasant taste. Now in the words of the philosopher again; “pure and clear water is (…) for the unconscious, a call to pollution”. True enough, for what is impure is a source of contamination for the body which according to Luc de Heusch is a “mirror of society’. The fear of ‘contamination’ is a system of symbolic protection of the cultural order. Society is threatened both from within and without” (De Heusch, 1967). Are not cultural beliefs such that the purifying power of the water of a river like the Ganges is greater than the diseases occasioned by its insalubrity? In other words, when a person accomplishes his ritual immersion in the Ganges, he sees only the sacred purification and not the real risk to health represented by the water.
Irrespective of religions and cultures, is not the element of water looked on as an object dating back to the origins of time? In Black Africa, for instance, “the world of the divine” is symbolized on the mythical and cosmological level by the element of “water”, for, in the last resort, does the latter not always come from on high before returning to the place it came from? To leave the beyond is to “descend”, emerge from the primal water, fall to earth like a child coming into the world, before drying, solidifying, consolidating and hardening. “Birth signifies merely the abandonment of the aquatic condition. (…) At puberty, the being quits once and for all the aquatic freshness of childhood and passes on into the warmth of adulthood.” (Erny, 1987)

Whether it comes from the sky or surges up from the ground, water embodies a positive image. The sacralization of natural springs is universal. To drink spring water assumes therefore a particularly important significance. And to know that the water one consumes comes from a spring imbues the person who drinks it with a feeling of unconscious rejuvenation. By virtue of its origin, this water has the power to reassure in regard to its quality and gives confidence to the man or woman who absorbs it: spring water can only be beneficial to health! In this way, a city dweller feels reassured to learn that the water coming out of his tap is spring water. Now half the population of Paris is supplied by spring waters, a fact of which more often than not it is unaware. Is not drinking spring water a means of escaping from urban pollution and rediscovering, if only for an instant, the unsullied universe?

From perceptions to daily practices…

Towards a sensorial valuation of quality

Increasingly watchful as he is with regard to what he absorbs, the consumer who turns on his tap has no real means of monitoring the quality of the water he uses and the risks it comprises for his health. He has no choice but he is obliged to trust the producer, the distributor and also the quality of the pipes in the private network. Or else, he has to resort to his individual expertise. It is then on the basis of his memories of taste and smell, as well as on his visual and tactile recollections that the consumer determines his own criteria of water quality and compares them with the water from the tap. “If the water is brown, that means something is wrong. But I’ve never had any problems” explained one woman. For another, “When one turns on the tap, the water can be described as bad if one detects a smell of chloride bleach or a ‘drug like’ taste. In that case, I won’t drink it even if is not a matter of quality but of taste. In Paris, the water is neutral, it has no scent or unpleasant smell. In other regions, one sometimes comes across an unpleasant odour.” As for a certain Korean woman, she does not bother to ask herself questions about the quality of the tap water, she simply considers it impure. She explained that in Korea one does not drink tap water without first filtering it and/or boiling it for cooking purposes, given that it is generally believed to be polluted. The practices of this Korean have not altered since she came to live in Paris. Is this not an indication, in the final analysis, that irrespective of the quality of the water, individual and cultural beliefs are passed on and persist over time? Anchored as they are in daily practices, they have led this mother of three children to choose a particular type of water depending on the use to which it is put: bottled or filtered water for drinking, boiled water for cooking… while tap water is reserved for washing vegetables, dishes or one’s own body.

Thus, if a priori water respects the statutory quality criteria, sensorial perceptions alone, constructed as they are by the consumer on the basis of his experience, his knowledge or other individual criteria, help to determine the use which will be made of it.

Does tap water have a taste?

At the beginning of the XIXth century, Brillat-Savarin explained that “if it is a question (…)
of an insipid beverage, like, for example, a glass of water, there exists neither a taste nor an aftertaste; one experiences nothing, one thinks of nothing; one has drunk and that is all there is to it.” (Brillat-Savarin, 1825) He made it clear that “pure water is not the cause of the sensation of taste because it contains no sapid particles. Dissolve a grain of salt in it and a few drops of vinegar, and the sensation will result.”

Mineralization of waters however offers the consumer a considerable variety of taste shades for his gustatory sensitivity. The attention he attaches to it enables him to appreciate. It is to slake, to quench one’s thirst, to cool one’s throat, to rinse one’s mouth… that one drinks. Depending on custom, the attention given to the taste of the water will vary. Furthermore, perceptions are a highly personal matter. Whereas several people may find that the water from the tap tastes bad when it should not have a taste at all, that is to say, a taste of chlorine, chalk, an aftertaste or a lack of freshness… others will perceive no disagreeable sensations.

These singular appreciations illustrate the complexity of perceptions. In reality, it is not just a matter of what the water tastes like but, above all, of how deeply anchored are the perceptions each person has of purity, cleanliness and health. Thus, each person’s practices are specific to a particular register.

Presence of unwanted elements: the example of Ca$^{2+}$

Aside from the deposit of calcium (scale) on household appliances, it is by direct contact with water, through the skin that each person, depending on his sensitivity, can determine his individual degree of acceptability regarding the presence of Ca$^{2+}$ in water and, more broadly speaking, its quality. Users are receptive and/or constantly made aware – particularly by the manufacturers of water softeners, sellers of washing powder or anti-liming products – of the formation of scale on account of tap water. From now on, this perceived, observed or imagined presence forms now part of the individual quality criteria of the water distributed; the latter may moreover evolve according to the dictates of fashion. Each one of us has had occasion to boil water and subsequently observe the traces of scale on the sides of the saucepan. These impurities present in the sink or on domestic appliances represent a cause of concern to consumers who imagine that this phenomenon is replicated in their organism. For this Korean, the question of the presence or otherwise of scale does not arise: “water must be transparent, otherwise it is not good”. The white traces left by scale are, in cultural terms, an indication of poor quality. Drinking bottled water serves to reassure and allows one to feel that you are not taking a health risk even if its calcium content is greater than that of tap water. Few people boil bottled water, which can on occasion possess a high calcium concentration… Now calcium forms part of the mineral salts that make up the tap water distributed and which are necessary for the organism. Under the effect, among others, of heat, these calcium salts tend to precipitate with the result that white particles appear. These are known as scale, so we are dealing here with the same mineral. However, the term calcium has a positive connotation since it is commonly used by doctors when they are talking about those elements essential to the organism in general and for the growth of children in particular. Thus, its presence in food products constitutes a source of wealth and a quality criterion that is strongly emphasized by the manufacturers of bottled water. Conversely, it is plumbers or washing powder salesmen who use the term scale. The aim is no longer to promote it or indeed to actively search for it but on the contrary to restrict its presence. Under these circumstances, it conveys negative connotations and the mineral loses something of its nobility.

In this way, does not then the fact that the consumer only perceives the presence of calcium in tap water in a negative way lead him to make a negative judgement as regards water, an element he looks on as a useful object and one essential in the kitchen, the
bathroom or the WC? The multiplicity of uses to which it is put, together with the changes of state and the temperature stresses it undergoes bring into sharper focus the different aspects of this living element. Contrary to tap water, bottled water, even if it is richer in calcium, is generally used for one purpose only – as a beverage. Does not the use of one term or another result in a genuine ambiguity as to perceptions and uses?

**What sort of water is fit for drinking?**

*Somewhere between automatism and uncertainty*

In France, as in all the developed countries, using a glass of water is looked on as a trivial, simple, easy and even commonplace gesture. In volume terms, water for drinking represent a mere 1% of overall consumption but it is vital. Moreover, this gesture conveys unconscious notions perceptible thanks to in-depth analysis of everyday consumption practices. The absorption of safe and healthy water – like any other nutriment – is essential and vital for each consumer for, in the words again of Gaston Bachelard, “all water is a milk. More precisely, any joyous beverage is a mother’s milk.” (Bachelard, 1942)

It is indeed the wish to feel secure, together with a guarantee of hygiene, that is sought by each and every person with the aim of avoiding any risks to his health and even more so to that of his children. To have confidence in the quality of tap water is therefore a necessary condition prior to its consumption. As things stand, instead of helping themselves to a glass of water from the tap, consumers are increasingly choosing water sold in bottles.

According to the results of a survey (C.I. Eau Sofres, 2001), 64% of French people claim to consume tap water at least once a week and 66% still mineral water. 54% are consumers of the mixed variety (they drink both tap water and still mineral water).

The quantity of bottled water consumed in France is constantly on the increase. On average, during the year 2000 a Frenchman will have consumed nearly 139 litres of bottled water or 43% more than in 1990 despite the fact that the quality of tap water has not declined. The market for bottled water is growing ceaselessly, but practices differ with different countries. For example, while large consumers like Germany and Austria drink almost exclusively sparkling mineral water, the Spaniards like the French and the Italians prefer still mineral water.

Aside from the question of the taste, a multiple and varied choice is offered to consumers whose prime concern is to exercise control over what they absorb. When the user turns on his tap, he is allowed no choice. He may wonder sometimes about the origin and the quality of the water he draws for he is unaware of its provenance and in what network it has circulated. His doubts are heightened by the fact that half the French population continue to think, even today, that tap water is produced directly from waters treated in purification stations. Users are indeed little or indeed wholly uninformed about the water distributed to their place of residence although its presence is now accepted as a matter of course. It forms part of the everyday furniture of home where it is both present and absent. In fact, tap water is in constant use for household tasks but remains scarcely visible in the domestic environment. Hardly has it come out of the tap than it flows a few centimetres further down to the bottom of the sink where it disappears into the depths of the impure network of sewers. In the space of an instant, it passes from a medium perceived as clean and healthy to one that is dark and dirty. In addition, more often than not, the media talk in alarmist terms about tap water that has become unfit for human consumption in such-and-such a town or city as a result of pollution. It is then considered to be a “water with too much…” or a “water without…”, without the minerals required by the organism; the risk is therefore constantly present. This negative image is heightened by the permanent promotion of bottled waters. These are seen to be pure and good for one’s health since they are rich in minerals. Or else, they are a “water with…” and, drawn as they are from unsullied and natural environments,
they are “waters without…” without these unhealthy and toxic substances; what is more, practical packaging makes it easy for anyone to take them along as he goes about his business and his travels.

Consumers who are increasingly concerned with knowing what it is they are eating are also paying more and more attention to what they drink. Certain people like this elderly couple have complete confidence in the tap water they drink every day “we’ve lived in this flat for over 40 years, we’ve always drunk the water from the tap without ever experiencing any health problems, and we’re not going to change now!”. Others, on the contrary, feel uncertain like the mother of a young family who, to avoid taking risks with her own health and that of her children, prefers on occasion to buy bottled water, in which she has rightly or wrongly greater confidence.

In-depth analysis of the practices of water drinkers forms part and parcel of a better understanding of the relationship entertained by all and sundry with his health and that of his children, the relationship entertained among separate individuals between private and public space and the confidence each person establishes with the product but also with the person responsible for manufacturing it and the space within which it circulates.

Should one drink tap water or bottled water?

One’s knowledge of the quality of the water distributed to one’s home is put to the test every time one turns on the tap. Thus, the daily renewal of this experience contributes to a permanent reassessment of the quality of the water and the possible health risks while boosting the feeling of confidence. Faced with a new context, each one of us has to construct new markers or cling on to what he knows. One woman, for example, expressed her genuine confidence in the water she drinks at home even if, from time to time, she buys bottled water. However, should she be invited to a friend’s house in another city she will ask herself if she can safely drink water from the tap. In fact, however, she feels reassured: “When I saw her giving it to her children to drink I was able to drink it myself without any problem.” Any nourishment given to a child can only be good for its health but individual practices are multiple and the presence of small children can sometimes lead one to reassess one’s quality criteria. Such is the case of the woman who drinks tap water everyday but systematically gives her grandchildren bottled water. In this way, she is assimilating into her practice the advice from doctors who frequently encourage people to give their children mineral water. Aside from the confidence consumers have in the medical discourse, they are constantly lent support by this message put out by sellers of bottled water. If this water is good for children, it is also good for adults! Thus gradually the entire family comes to drink bottled water as another woman explained “When my children were born, I gave them mineral water, that was 25 years ago since when that’s what I always drink.”

Depending on the context, habits evolve and adapt to take on a new social significance. Between the private and the public space, practices change as a woman explained: “When I’m in a restaurant, what I drink will differ depending on what I’m eating. In a brasserie, I drink tap water, for example. There are occasions however when drinking tap water produces the wrong impression. When I go to a café during the day with friends, I drink still bottled water.” Another woman who drinks tap water every day told us that when she entertains friends at home, she generally offers them mineral water at the end of the meal “it’s that little extra something, at the end of a meal it’s pleasant to drink mineral water”. Thus this practice goes hand in hand with the pleasure of receiving guests but it can also be perceived as a constraint or even a social obligation. Indeed, this other woman feels bound to put a bottle of mineral water on the table when entertaining: “my guests would say to themselves: ‘I give her bottled water and she gives me tap water…’ I am anxious to avoid any misunderstandings”. The presence or absence of a bottle of water bought from a shop
serves as a social marker, which makes it possible to give in an indirect way an image of oneself. Thus the uses connected with this object and the new roles allocated to it form part of the gradual emergence of a new social code.

The social context and the atmosphere surrounding each individual may have an impact on everyday practices. In a crisis situation such as that resulting from the events of 11 September 2001, individual fears and apprehensions, whether founded or unfounded, take for example the contamination of the drinking water networks, are amplified with the result that everyone feels vulnerable in the face of a social reality deemed to be menacing. The need for security and control becomes ever greater and plays its part in accentuating certain types of behaviour or causes new ones to emerge. In this way, so as to avoid any risk to his health, the user will on occasion prefer to consume bottled water, a product with which he is familiar and which he has chosen in preference to tap water over which he has no control. Analysis of changes in the consumption of bottled water during this period will aid distributors in the task of determining the reasons that cause consumers to adopt new styles of behaviour. Do currently emerging practices meet the problems connected with the taste, or rather the “bad taste of the water”, caused by an increase in the chlorine level in water in the wake of the directive issued by the governmental authorities? Are we dealing here with a sudden loss of confidence in the quality of tap water occasioned by a general feeling of insecurity?

Conclusion
To talk about the quality of water or a product takes on a different meaning depending on the position occupied by the players between the spring, the production plant and the tap. The water produced in Paris is beyond reproach. It meets all the quality criteria defined under precise regulations and guarantees the consumer an absence of risk to his health. On the other hand, as we have just seen, each consumer refers to other criteria before placing his confidence in the quality of the water distributed through the tap. Personal experience, the environment in which each person lives and evolves do indeed play an important role in individual behaviour and the daily use of tap water. It is on the strength of these data that SAGEP is continuing to develop its numerous actions (Euzen et al., 2001) destined for the attention of consumers.

To know and take into account the perceptions, practices and behaviour of consumers is of fundamental importance for any company wishing to conduct a quality approach and develop actions suited to the public.

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