

202.1 03WA



# WATER AND CULTURAL DIVERSITY

*An examination of water in Japanese, Arabic,  
European and African cultures*



Centre Franco-Japonais  
Alliance Fra 202.1-03WA-  
17846

## *Preface*

*In all places, and at all times, the relationship between water and culture has been a profound, complex and ambivalent one.*

*Culture has an important influence on how users of water perceive this vital natural resource, and determines their behaviour in relation to it. If users are to participate meaningfully in the sustainable management of water, cultural behaviours will have to be taken into account.*

*Aware of this necessity, the French Ministry of Environment and Sustainable Development decided to support, in the frame of the Franco-Japanese cooperation, an initial contribution on the theme of water and cultural diversity which was developed by the Franco-Japanese Centre/Alliance française in Osaka, on the occasion of the 3rd World Water Forum in Kyoto from the 16th to the 23rd of March 2003.*

*By taking account of cultural diversity in sustainable development, in addition to the usual economic, social and environmental issues, we will help to humanise the globalisation process.*

*This discussion will "illuminate" and assess the long history linking civilisations to water, by focusing in particular on European, Japanese, Arabic and African cultures.*

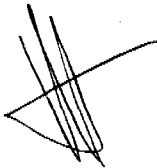
*Intended for a wide audience, this publication will allow the reader to dive into the strange world of water myths, to discover their similarities and permanence from one civilisation to another, to explore extreme situations of drought and flood, and the sacred as well as mal-evil aspects of water.*

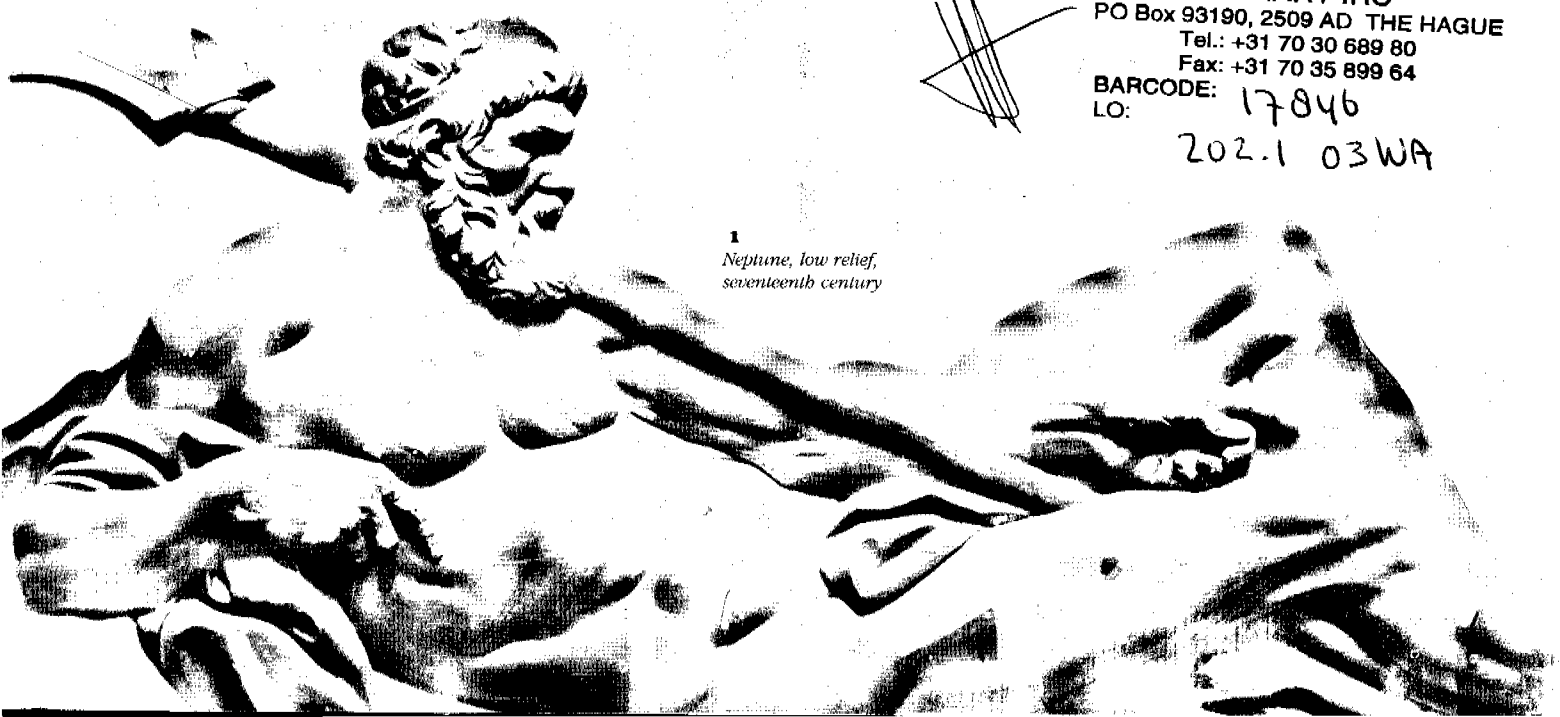
*These cultural elements represent an innovative starting point from which to raise the general public's awareness of water management, until now largely the reserve of specialists.*

**Mr Pascal BERTEAUD**

Water Director

Ministry of Environment and Sustainable Development

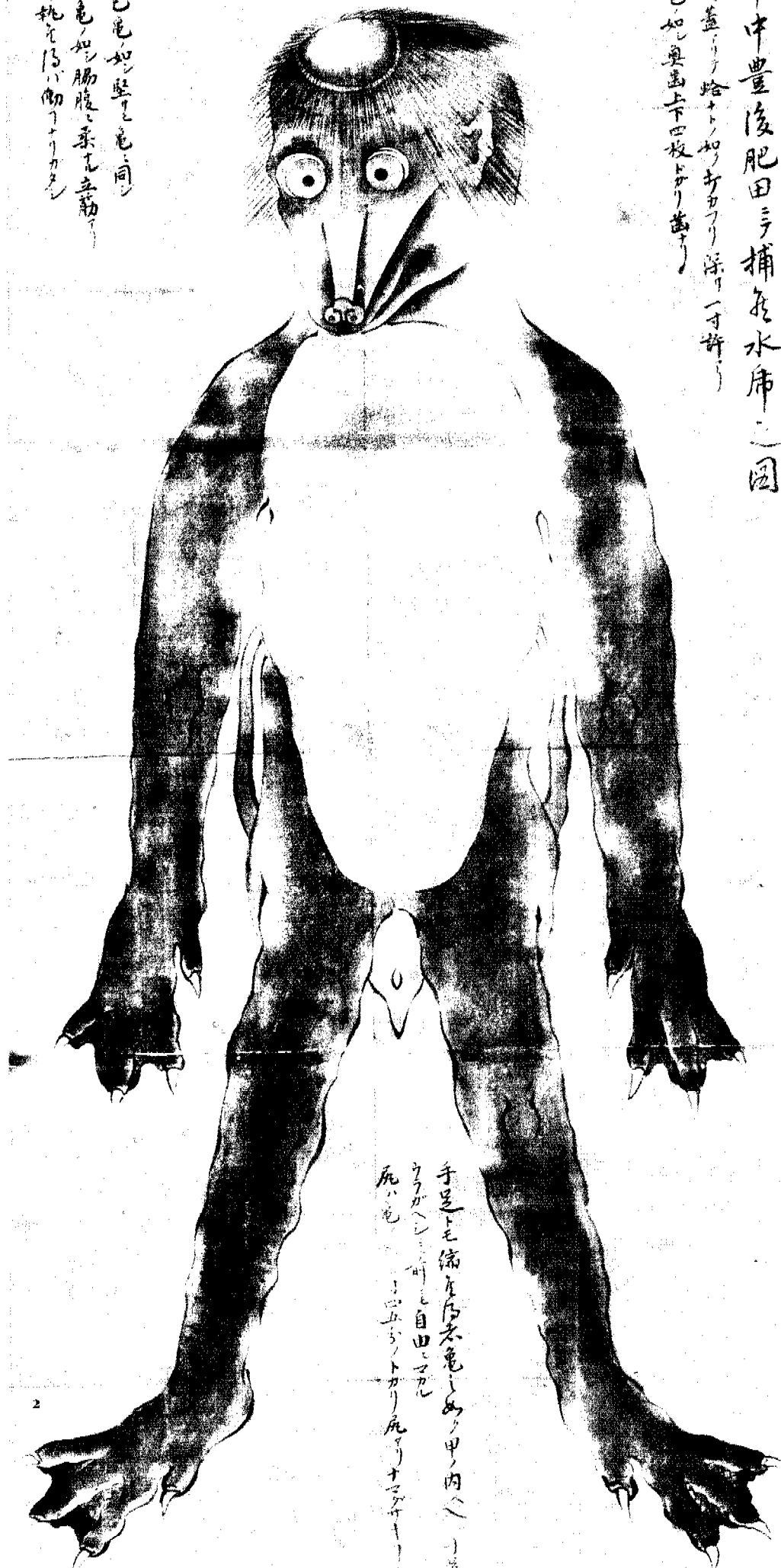
  
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1  
Neptune, low relief,  
seventeenth century

寛永年中豊後肥田ヲ捕獲水席之図

頭、血蓋、ハ、蛤、ト、シ、カ、カ、リ、深、リ、一、寸、許、リ、  
齒、色、如、奥、歯、上、下、四、枚、ト、シ、テ、カ、リ、

背、色、色、如、堅、毛、同、シ、  
腹、毛、如、腸、腹、柔、毛、立、筋、  
爰、執、行、ハ、御、ナ、リ、カ、ス、



手足、上、毛、端、在、存、冬、毛、ハ、ぬ、ク、甲、内、ハ、一、寸、  
ウ、カ、ヘ、シ、ト、シ、テ、自、由、ニ、カ、ル、  
死、ハ、也、ト、シ、テ、ト、カ、リ、死、ナ、リ、ト、シ、テ、カ、リ、

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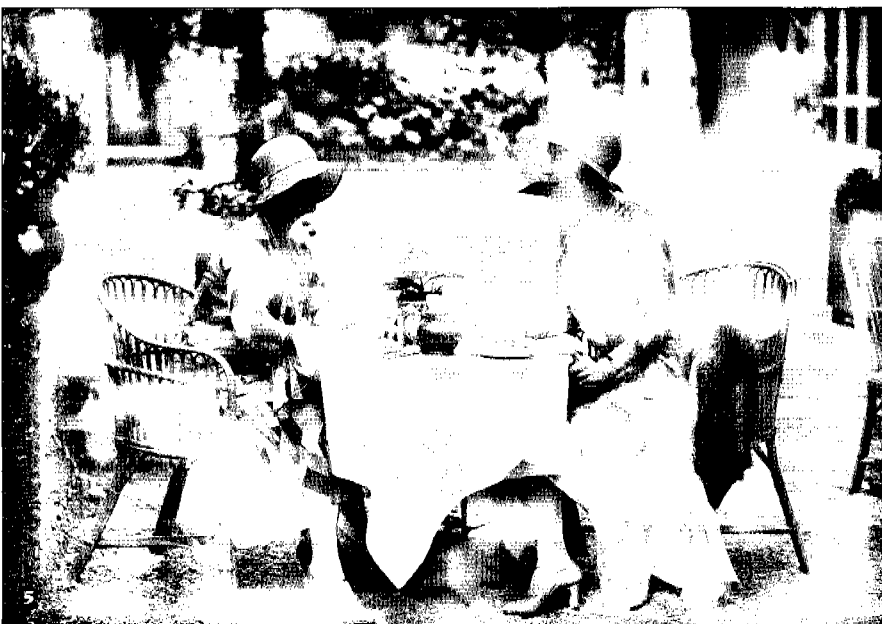
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*Tea ceremony, Japan, around 1900*



*Midelt (Atlas-Morocco)- Mint tea, an European woman among the Berber*



*Teatime in the garden of the Ritz hotel around 1930, Paris*

*Water is the mirror of the past,  
present and future  
Gaston BACHELARD*

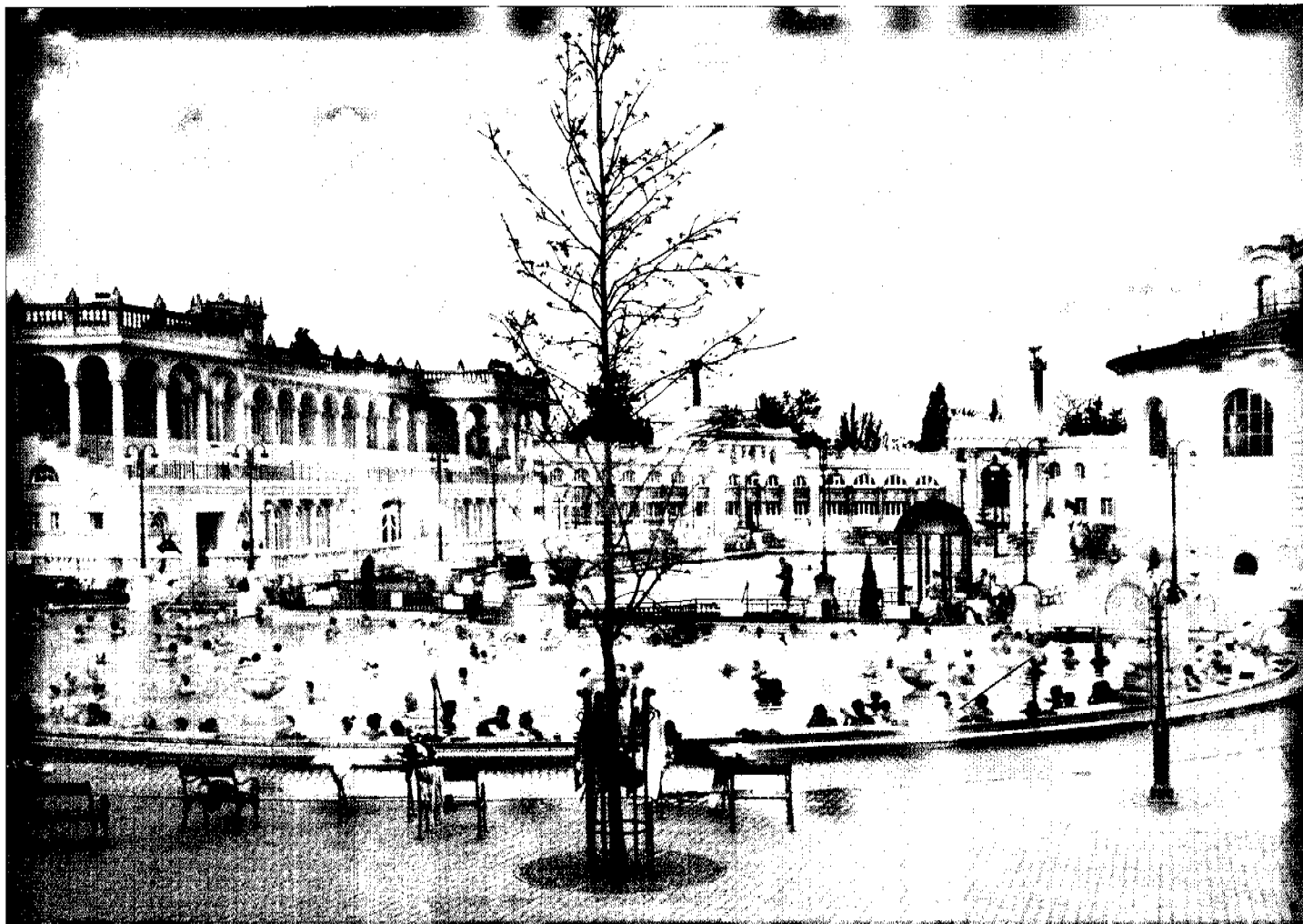
## ***Water and culture, a vital combination***

Water is an essential element of nature. It was there before the human race appeared and has continued to be an essential part of the natural world. It has been affected and changed by the transformations made by humans to control their living conditions.

Nature is often contrasted with the concept of culture, or civilisation, which encompasses all social phenomena: customs and traditions, beliefs and religions, ideas and mentalities, morals and behaviour, institutions, arts, sciences and technologies, etc. The concept of culture includes not only all ideas, beliefs and knowledge, but also their intellectual and artistic expression, as well as the social and institutional structures which characterise a given society at a certain point in its history. In comparison to animal societies governed by instinct, that is from within, human societies have conventional rules imposed from without. If the behaviours of animals are the result of pure biology, the laws of human societies, and as a result individual and collective behaviours, are derived from culture. The cultures of human societies are neither universal through space, nor invariable over time. They vary in space, from one region to another, and evolve in situ over the course of time. They thus have important geographical and historical connections.

Culture is an expression of human creativity through which people assert their personality and identity, both on an individual basis, for example in artistic areas, but also in order to organise life with their fellow humans, by shaping the natural and social environment in accordance with the constraints imposed on them and the criteria they themselves have set up.

To a large extent, culture is the product of our imagination, that is, our ability to represent, invent and innovate. According to the French philosopher Gaston BACHELARD, the human imagination is "the function of the surreal",



*Thermal Springs, Budapest, Hungary*

that is, a form of escape outside and beyond commonly accepted truths, which this same imagination constantly calls into question; it thus has the ability to explore and anticipate. It represents the power to change the habitual clichés supplied by our perception, to free ourselves from initial images and change them. A fundamentally dynamic and organising power, it is the experience of openness, novelty and invention.

Using theories of history based on the concepts of evolution and progress, attempts have been made to create a supposedly objective foundation from which to rank cultures hierarchically. However, any comparison of cultures can only be based on isolated elements taken out of context, and thus on truncated and superficial connections. The judgements made are always based on a system of values belonging to a particular culture which claims itself as a reference point or even as the dominant culture.

In fact, each culture is the slowly developed product of a series of gradual adaptations to a particular geographical environment, a cumulative set of individual and collective responses to the fundamental questions posed by humans, in specific circumstances of place and time. Each culture thus corresponds to specific constraints, requirements and plans. As a result, it would be quite pointless, and even absurd, to try and rank them hierarchically.

Given that water represents an essential, vital element in our own bodies and in all our activities, management of it should take into account not only the facts related to nature which are particularly contingent, namely geographical (hydro-geology, topography, etc.)

and climatic conditions, but also theoretical and practical cultural considerations, beliefs and knowledge, myths and representations, rituals, customs and traditions.

Just like culture, water is intimately related to the sensibilities, representations and mentalities which create feelings of individual and collective identity, and which can also be a source of potential conflict, or a powerful catalyst for creating solidarity and therefore social and territorial cohesion.

To sum up, water and culture are both fluids - the first one being concrete, and the second immaterial - which give life to and unify all members of a human society. The etymological root of the word "culture" in fact comes the Latin verb "colare, cultus", meaning to flow, thus clearly showing the moveable and evolutionary character of both concepts.

# Water myths and rituals

Humans have an ambivalent and complex relationship with water involving utilitarian economic considerations and of course sanitary and social aspects, with water providing health, safety and public salubrity, but also bringing the sometimes fatal risk of disease and flooding. There are also ecological and environmental dimensions, water being just as vital, and sometimes more so, than the soil itself for fauna and flora as well as humans. It is also important, however, to accurately assess the significance of the cultural and even spiritual value attached to water. In the most ancient civilisations, water was in fact sacred, like the source of life itself, and it thus has an essential place in all mythologies and religions of the world. Its combined powers of life and death make it a metaphysical element. Its symbolic value in the human imagination gives it a very particular emotional charge which should not be ignored.

## *Water mythologies*

Most of the known mythologies integrate many pre-existing pagan traditions in an elaborate religious system enigmatically associating water with life and death, reproduction and power. Primeval divinities often appear in human, animal or mixed form and a number of these cosmologies are based on the play between these forces.

For the Sumerians and Akkadians, Apsu was the primordial chaos, an ocean of fresh water supporting the

Earth, which united with the goddess Tiamat, representing salt water, at the beginning of time.

In Japanese mythology, the word "umi" (ocean) is the homophone of the word meaning "to give life" and many Japanese divinities were born through contact with the sea. The god of the seas, later called the king of the dragons, lived under the waves with his daughters and attendants, like the Greek divinities of the sea. In the Japanese genesis myth, a giant carp wakes from sleep under the sea. Its furious thrashing creates a huge tidal wave or tsunami, from which the earth (the Japanese islands) emerges.

The Egyptian goddess Nut symbolised the unifying stream of heavenly waters at the beginning of time. She was later represented in Greek mythology by the Cretan princess Ariane and the goddess Aphrodite.

In Hinduism, after sleeping on the cosmic serpent at the surface of the water, Visnu created the earth.

It was while bathing in the Nile that the daughter of the pharaoh found Moses (whose name means "drawn from the waters") in a basket. And one can imagine that the forces of water continued to influence the extraordinary destiny of these characters.

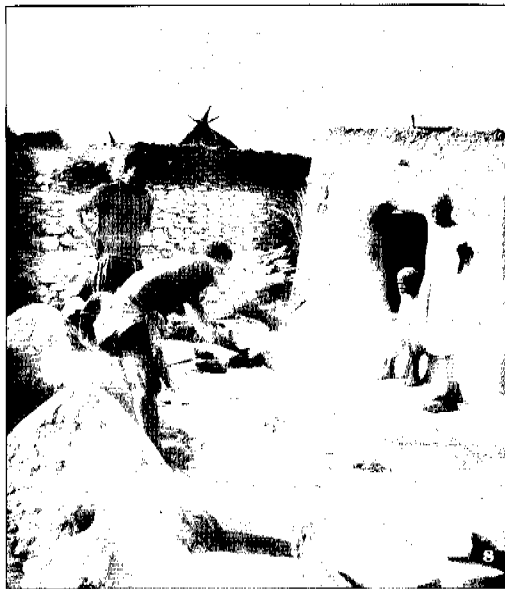
Often mythical rivers, for example the Styx and Acheron, are compulsory points of passage to the beyond or the beneath, and thus represent the "psychopump" ability of water; like the winged horse Thanatos, they transport souls.



*"Water" (Neptune and Amphitricha)*

In Mali, in the mythology of the Dogon area, typified by sandstone cliffs where water is rare and dependent on rainfall, Nommo, whose name means "to make drink", is celebrated each year in traditional ceremonies shortly before the arrival of the rains. With both a single and multiple presence, Nommo is found in all forms of water, from the river Niger to the smallest individual drinking gourd: he is humidity, fertility, life, light and the cultivated earth.

## *The major beliefs*



*Sacrificer ritual, Dogon country, Mali*

In many beliefs, water which is visible, nearby and present is thought to be connected to other invisible or distant ancient waters.

For example, the water lying under the earth's crust is often assimilated with the waters of the beginning of time, the chaotic waters from which the organised universe gradually emerged. In the Judeo-Christian tradition, water occupies a significant place in the book of Genesis in the Bible: "darkness was upon the face of the deep and the Spirit of God moved upon the face of the waters" (Genesis 1.1.2.). God organised the universe from water: "let there be a firmament in the midst of the waters, and let it divide the waters from the waters. [...]. And it was so. And God called the firmament Heaven" (I.C.11). God also said: "let the waters under the heaven be gathered together unto one place, and let the dry land appear" (I.20.21).

In the Laws of Manou, the ancient Indian compendium of laws and customs inspired by sutras written between 600 and 200 B.C., the confused character of these waters at the beginning of the world is clearly described: "this world was darkness, unknowable, with nothing distinctive, escaping reasoning and percep-

tion, as if fully asleep. Then the august being existing of and by itself [...] appeared to dissipate the darkness. In order to create the different creatures from its body, it first produced the waters through its thinking and then deposited its seed there" (1.5.8.).

References to water are also numerous and significant in the text of the Koran and many suras mention it; for example, one among many is the particularly famous verse, often appearing in calligraphy above various hydraulic constructions such as spring tapings, boreholes, dams, etc.: "We have made of water everything living" (Koran XXI, 30). This is particularly pertinent given the arid or semi-arid regions in which the religion was born and then developed.

## *Water rituals*

Out of the four elements, water, even more than air, is the element most capable of transmitting powers and special properties. Water is both fertile and creates fertility, as witnessed by the countless pilgrimages of young women to springs and priapic fountains. Whether pure or purifying, through solemn benediction on the day of the Epiphany in the East, or through the horn of the unicorn at each new dawn, water is thought to purify and heal.

It is also responsible for curses, bewitchment and release from spells, and sometimes even incorporates the spirit of the texts written on the receptacles containing it. In Islamic countries, for example, the bowls used for ablutions are sometimes covered with verses from the Koran.

Through countless rituals, humans ensured that these powers were maintained and used effectively. They attempted to win over vital forces which had the potential to be terribly destructive. They also made sure that the essential natural cycles of the seasons and rains were repeated from year to year, in order to supply springs or wells, fill water tanks or irrigate crops.

Such ceremonies still exist today in many parts of the world, for example the "fiancées of the Nile" are dolls thrown into the river, inviting it to start the beneficial flooding process.

# Water myths and rituals

## *Rituals to bring rain*

Rain gives life, supports it and allows it to flourish. Without it, life is no longer possible.

For the ancient Hebrews, rain is a benediction that the heavens grant in return for observation of the Law. Its source is seen as an inexhaustible reservoir in the heavens. Although sin results in drought, pardon remains possible: this is seen in the story of famine in the country of Ahab (1, Kings, 18) where God promises rain to the prophet Elijah if the people turn away from the cult of Baal. The people yield; a cloud appears and it starts to rain.

And as rain is a gift from heaven, ancient peoples have imagined all kinds of ways in which to please the celestial divinities. Despite the disconcerting variety of rituals throughout the world, the purpose is always the same: to attract the attention of the gods, thank them, arouse their compassion and persuade them to keep providing an abundance of water.

In order to ensure success, rain rituals very often make use of poetry, music and dance, used in combination since the beginning of time.

## *Ablution and purification rituals*

Throughout the world, water is used for the spiritual purification of things and people.

Washing the dead is universally symbolic of purifying both body and soul.

In ancient Egypt, water was already being used for purification by the priests of Isis: their faces and hands are shown wet with water before the ritual starts and the crowd follows their example.

The mysteries of Eleusis in ancient Greece are a good example of purification through ablution.

For the ancient Hebrews, cleanliness was a moral obligation: "cleanliness is next to godliness." Before entering a sacred place, rabbis wash their hands and feet. Ritual baths, or mikvahs, are used by orthodox Jews to wash and purify themselves, particularly before religious events. Similarly, on entering a church, orthodox Christians and Catholics cross themselves with holy water. The Islamic custom of performing ablutions before entering the mosque was originally based on the need for hygiene, but this has gradually evolved into prayer to Allah.

For the Celtic populations of the Middle Ages, purification took the form of jumping into cold water.

The ritual of the first bath of the imperial child in the court of Japan was perhaps the first ablution to be codi-

fied in Japanese history. Accompanied by a ceremony and reading of sacred texts, this ritual has similarities with baptism, and could be used only by the imperial family.

## *Baptism*

The origins of Christian baptism have parallels in Egypt, Greece and the ancient East, including India, where ritual bathing in the Ganges is still practised. At the same time, the Church incorporated certain pagan rituals, such as Saint John's Eve, in which water plays such an important role, by rededicating it to Saint John the Baptist. Ancient Jewish elements are also found in Christian baptism.

The idea underpinning baptism is that no-one can enter the Kingdom of Heaven without it. Although the first baptisms were conducted outside in springs and rivers, sites were later specially built for this ceremony in the form of baptismal fonts.

The old word "fonts" comes from the Latin "fons" which designates not only the spring itself, but also the god who inhabits it.

## *Water and symbols*

In human imagination and culture, water is often associated with a multitude of traditional symbols, some positive and some negative.



*Christ baptism, sketch for the Trinity Church, France*





*Benares, the Ganges River, India*

At all times and throughout the world, water represents life, maternity and fertility in general, but also purification and changing from one state to another.

Thus, in the Koran, water, like the sky and earth, is an essential element testifying to the existence of the Prophet.

Water can also evoke death however: for the Romans, the passage from life to death was represented by crossing a mythical river, the Styx.

The universal image of the Flood represents devastation and destruction.

In all cultures, marshy waters are still sometimes today associated with the concept of unhealthy decomposition and fear, as floods are associated with epidemics.

## ***Myths of today***

Water still has a symbolic value. Since early times, and still today, astrology has captured the imagination of humans on all continents. Three of the twelve signs of the zodiac are devoted to the element water. Water also combines with the other elements (fire, earth and air), as in real life.

The following three signs express three aspects of the liquid element: Cancer symbolises water as mother, Scorpion symbolises water as metamorphosis, dissolving and destroying the elements to recreate them in a different way, and Pisces marks the point after meta-

morphosis, the return to the universal which contains the seeds of the start of a new cycle. This is why Pisces is the last of the twelve signs of the zodiac.

## ***Water and annual festivals in Japan: "Wakamizu" and "Wakamizu-Mukae"***

Since the Jomon period, life and agriculture in Japan have been based around the activity of rice growing. As this is highly dependent on water, the latter has always been at the centre of both daily life and traditional beliefs. In some villages, water was the benevolent divinity of the harvest and, as such, very respected. But, in some large towns affected by flooding, water was considered to be a harmful divinity, and as a result chased to the river or sea.

Water offered on the 1st of January is called "Wakamizu" or "Hatsumizu" (literally: "First Water"). An offering is made to the "God of the Year". People then either rinse their mouths with it or use it to prepare tea. The act of drawing the water is called "Wakamizu-Mukae" ("the Welcome of Wakamizu"): this role traditionally falls to a man known as "Toshi-Otoko" ("Man of the Year"), called "the Master of the Festivals". In western Japan, this role may be played by a woman, known as "Toshi-Onna" ("Woman of the Year").

# Rivers and civilisation



Assouan (Egyptia), Merka's grave

## Mythological rivers

Water is an important element in Classical mythology: according to the Greek poet Homer, rivers were born from and returned to Tartare, an abyss located in the entrails of the earth. For the Ancient Greeks, springs had a divine power. Similarly, the Romans thought that large rivers were inhabited by nymphs, and smaller ones by bearded gods. The traditional culture of Japan includes "kappas", mysterious and dangerous beings who haunt the bottom of Japanese rivers.

Water also plays an essential role in the Bible: the book of Genesis describes how, at the beginning of the world, "darkness was upon the face of the deep and the Spirit of God moved upon the face of the waters".

The hell of the ancient Greeks had five well-known rivers: the Styx, Acheron, Cocytus, Pyriphlegethon and Lethe. On the Styx, the river of hate encircling hell nine times, the ferryman Charon rowed the dead to the god Hades. If mortals touched the waters of the Styx, they were endowed with superhuman powers. Thetis, mother of Achilles, plunged him in the Styx at his birth to make him invincible – except for his heel, by which she held him. The Lethe is the river of oblivion, where the souls of the dead forget their former lives.

In all cultures, rivers always link life with death. In the tombs of the ancient Japanese, like the Egyptians and many other cultures, boats are the receptacles for souls on their journey and crossing to the beyond.

## The flood

The high waters and floods caused by rivers are, together with the great flood itself, the oldest metaphors in the world for the confused power of good and evil at the end of the world and the coming of the next one. Through flooding, destruction turns into purification and renewal, and death leads to rebirth.

These examples are found not only in Genesis and the Babylonian epic of Gilgamesh, but also in Chinese, Indian, African, Polynesian and pre-Columbian mythologies! All describe torrential rains followed by floods, until the appearance of a mythical bird brings back life and vegetation. In several versions, a flood engulfs the land and everything is destroyed, apart from one privileged couple; the survivors escape on a raft or tree trunk and try to find refuge. All these versions have interesting similarities between an evil successfully eradicated and the chosen few starting a virtuous life atop an isolated mountain. The rising waters of rivers are the agents of this metamorphosis in all cultures.



Kappa, Japan

## Noah's Ark

According to the Judeo-Christian tradition, Noah and his Chaldean parallel Outa-Napishtim, gather the representatives of each living race in an ark, while the rest perish in the flood. The word "ark" is similar to the Sanskrit word "argha" (the crescent), the lunar boat which transported souls to a new incarnation. In the Old Testament, the ark is "tebah", which also refers to the basket Moses is discovered in on the banks of the Nile.

In the Epic of Gilgamesh, Ishtar, the Babylonian Moon goddess, calls on a flood to destroy the world.

## Miraculous water from springs and wells

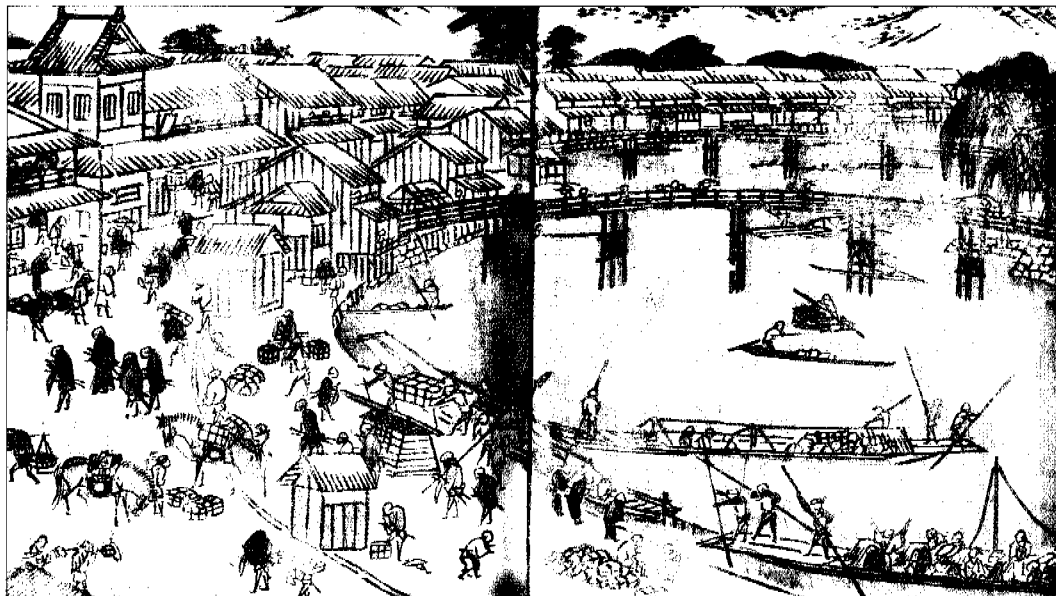
Springs and wells are traditionally seen as places of interaction, social contact and consolation, inhabited by benevolent spirits with the gift of prophecy. As such, they are often the site of worship and pilgrimage; they became secular temples decorated with sacred rocks or miraculous plants. Even after the arrival of Christianity, this form of adoration continued, but in order to minimise its importance, these places became known as "wishing wells".

Each of these wells had a particular power and may have been the precursors of the temples and churches we know today.

By offering them a needle or coin, we may find solutions to the questions that trouble us.

During the Roman Fontinalia, the festival on the 13th of October celebrating Fontus, the god of fountains and wells, garlands of flowers are thrown in springs and used to decorate wells.

The springs and wells of pagan times are not only holy places, they also lie within the very heart of the social community. They are a meeting point for everyone. Later, the Christian apostles gave their sermons and baptised converts there.



Activities at a river some time ago, Japan

The spring Zamzam lies at the centre of Mecca. According to Islamic legend, Ishmael, the son of Abraham, and Hagar his mother, beg for water during their flight through the desert. Hagar runs over the mountains and Ishmael filters the sand between his fingers. Suddenly a spring gushes forth. Since that time, homage to the spring Zamzam and drinking its waters are an integral part of the pilgrimage to Mecca.

These forms of worship are often connected to a goddess of life, opening the path to mystical participation. If torrents were associated with the divine body, their benefits - life, health and abundance - were likely to be even more noticeable.

The Greeks enshrined their sacred springs in artificial basins and surrounded them with representations of associated divinities. Both Roman and Celtic myths have a whole repertoire of goddesses and nymphs residing at various water sources. Rivers were often given the name of the local goddess, for example, the Seine is named after the goddess Sequana of the Gauls. The etymological origin of this name may even be Etruscan. Hundreds of Gallo-Roman wooden figures representing parts of the human body were discovered at the source of the Seine in 1960, bearing witness to a belief in the healing powers of the waters emerging there.

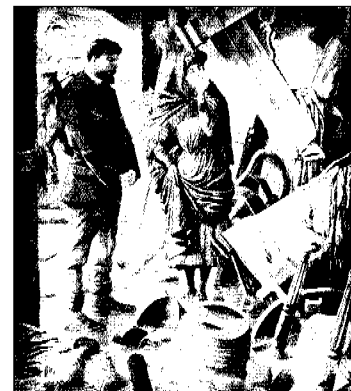
## Pilgrimages to rivers

The worship performed along certain rivers and streams gives rise to pilgrimages, in memory of sacred people or their healing properties. An example from the Christian world is the famous river Jordan where Christ was baptised.

The Hindus tell how the six thousand sons of the king Sagara were incinerated as punishment for their imprudence; the goddess Ganga, from which the Ganges takes its name, descended from the heavens to purify their ashes. The ritual took place in the delta of Bengal. Since that time, Hindus regularly pay homage to the Ganges through ritual bathing to cleanse them of their sins. Those who drown there are reborn among the gods.



Floods in the south of France



Floods of 1910, Stricken population back home, Paris, France

# Rivers and civilisation



Waterwheel, Japan

## *Water, the cradle of civilisation*

Because human beings have a vital need to drink water every day to survive, and because most of their economic, social and cultural activities require good-quality water in appropriate quantities, populations have always been established and developed where they had easy access to this precious resource, either near a river or lake, next to springs or wells or at the sea's edge.

Water is as essential for nature as it is for humans: without it, no life is possible for fauna, flora and ecosystems. It is also responsible for creating geographical relief, and shaping and changing the landscapes of the countryside. It also has the ability to cause natural catastrophes, droughts, floods, mudslides, landslides, avalanches etc.

For both human societies and nature, the water cycle is, to some extent, the equivalent of the individual's circulation system: it irrigates, nourishes and gives life, it dilutes and purifies, and it regulates the temperature of the human body, etc.

These water resources, intimately connected to the land over which they flow, are not inexhaustible, even though they may be regularly renewed through the water cycle and the rhythm of the seasons. This is

especially true today, the nature and intensity of human, urban, agricultural and industrial activities raise the problem of their sustainability and impact on the environment, as well as their effect on the climate and the possible changes this may bring about.

Famous civilisations developed and flourished in the valleys of large rivers. Egyptian civilisation thus had its origins close to the Nile, several thousand years before the Christian era. The river provided people with both food and drink as well as the means for travel and trade. At this period, water already had a vital and strategic importance, and the Egyptians built bastions near their wells so that they could defend them in the event of conflict.

This explains why most of the great ancient civilisations are also termed "water civilisations". Very often they bear the name of the river around which they flourished. Thus to refer to the Assyrian empires of Babylon and Mesopotamia (a word whose Greek etymology means "land between rivers") we speak of the Tigris and Euphrates civilisations, in ancient Egypt the Nile civilisation, in India and Pakistan the Indus civilisation, and in China the Huang-Ho civilisation. The same goes for other great civilisations, for example in Central America and Peru, we refer to the Aztec, Inca and Maya civilisations which flourished in the coastal valleys and around the lakes of the region, the Khmer civilisation along the Mekong, other brilliant civilisations which spread along the Ganges, and in central



Activities on the river bank of the Niger, Gao Port, Mali



*Saqui canal, France*

Asia, in the valleys of Fergana in Afghanistan, or in Iran along the rivers Helmand and Dez.

Observation of all these civilisations shows that their development was directly related to the extent to which they could control and efficiently manage water. Conversely, weakening of this social control over water automatically led to their decline and inevitable disappearance. This was the case everywhere, in China, Mesopotamia, Egypt, Persia, India, Latin America and in the Roman Empire.

In all periods, particularly those which experienced strong and lasting political power, humans continuously built water-related constructions of varying size and importance, in order to improve their living conditions and celebrate their form of culture and civilisation, often glorifying their system of government and leaders in the eyes of the population.

To do this, they mobilised considerable human and financial resources, making use of the most advanced technology of the time. Many traces and remains of these works still exist today, some famous examples of which are still in use.

Despite the fact that projects might have been started under a previous regime, as they often took a long time to come to fruition, their completion was always used as an important opportunity for media coverage and even propaganda. The name given to these works often reflected a desire for posterity, as shown by the following examples: the Claudius aqueduct and Caracalla baths in Rome, the Albert canal in Belgium, the Isabel II canal supplying water to Madrid, the Medici fountain in Paris, the Cavour canal in Piedmont, lake Nasser on the Nile, lake El Assad on the Syrian Euphrates, the Mohammed V dam in Morocco, the Saddam dam near Mossoul on the Iraqi

Tigris and the Atatürk dam in the large water development project in eastern Anatolia, etc.

A brief look at the past illustrates the close relationship between water quality and economic, social and cultural development, as well as political stability.

In sub-Saharan Africa for example, the lakes have gradually dried up, and wells and bore-holes have to be dug further and further down to reach water. The villagers, who are very attached to their roots, do not want to leave the land of their ancestors which, however, is cruelly lacking in water; this has resulted in failed crops and dangerous food shortages. The highly unpredictable river Niger is feared by local populations; before any long journey, boats are protected from evil spirits to ensure that they reach Mopti, the Venice of Africa, at the confluence of the Niger and Bahmi rivers, a trading and commercial town for all the peoples of the Sahel.

Another example is the San people, living since time immemorial in the arid region of the Kalahari in central Africa, today shared between Namibia, Botswana and South Africa; their development clearly shows the adaptation of humans to a hostile environment thanks to a well-adapted system of mutual aid. In the 17th century, the arrival of European colonialists and Bantous radically changed this civilisation: the technology used by these groups dried up sources of water, lowered water tables and turned the San into "Bushmen".



*Haider pinnace, France*



*Wood floating, Finland*

# Rivers and civilisation

## *Water, culture and language*

Since the beginning of time, as soon as humans started living together, in families, tribes, villages or towns, the very first thing that they shared on a daily basis was water ... and language, a concentrated form of culture as it were, both of which allowed them to live, communicate and flourish. After a period of bartering, a common currency was created facilitating the exchange of goods and services.

According to the famous sentence of the French linguist Claude HAGEGE, "a language lives from the culture that it expresses".

Water, language and money therefore all "irrigate" the economic, social, environmental and cultural fabric in their own way, giving it life and unifying it. There are numerous linguistic analogies where a water-related concept is extended to refer to cultural concepts: for example, the words "pool" and "basin" have been extended to linguistic pool, economic pool, employment pool, mineral basin, coal basin, etc. This is not surprising given that, on all continents and at all periods, water and rivers have always been used as natural paths of penetration, communication and transport for people and goods.

## *The importance of water in Japanese culture*

From their earliest history, the Japanese have recognised the formidable force of nature and respected it as a sacred presence, resulting in the worship of a multitude of divinities related to natural phenomena.

Sensing a divine presence in rain and water, the Japanese created divinities of nature, which became especially significant as rice growing developed into the country's principal agricultural activity. The peasants created gods for each episode of their lives involving water. This resulted in many different gods of rain and water, as well as places of worship.

There are gods of Japanese origin, such as "Mizuhanome", "Takaokami", "Kuraokami" and "Ikazuchi", and also gods of foreign origin, with "the dragon God", "Konpira", "Benzaiten" and "Syuten" being the most well-known.

Places of worship differ, depending on the use or function that water has; it may be "domestic water" (the availability of water for drinking, cooking and clothes washing, i.e. for daily life), or water for agriculture (land irrigation and protection from drought), or water which is useful for commercial activities (prosperity and security). The place of worship could therefore be a bathroom, an oven, a well, the boundaries of a rice field, a lake or sea shore, the foot of a mountain, a spring, waterfall or pond.

These places of worship were chosen in strategic locations from both a geographical and visual point of view, in areas directly connected to daily life and to the work of the population. They were also used to mark dangerous places, or were related to the memory of natural catastrophes, and thus created for protective purposes.

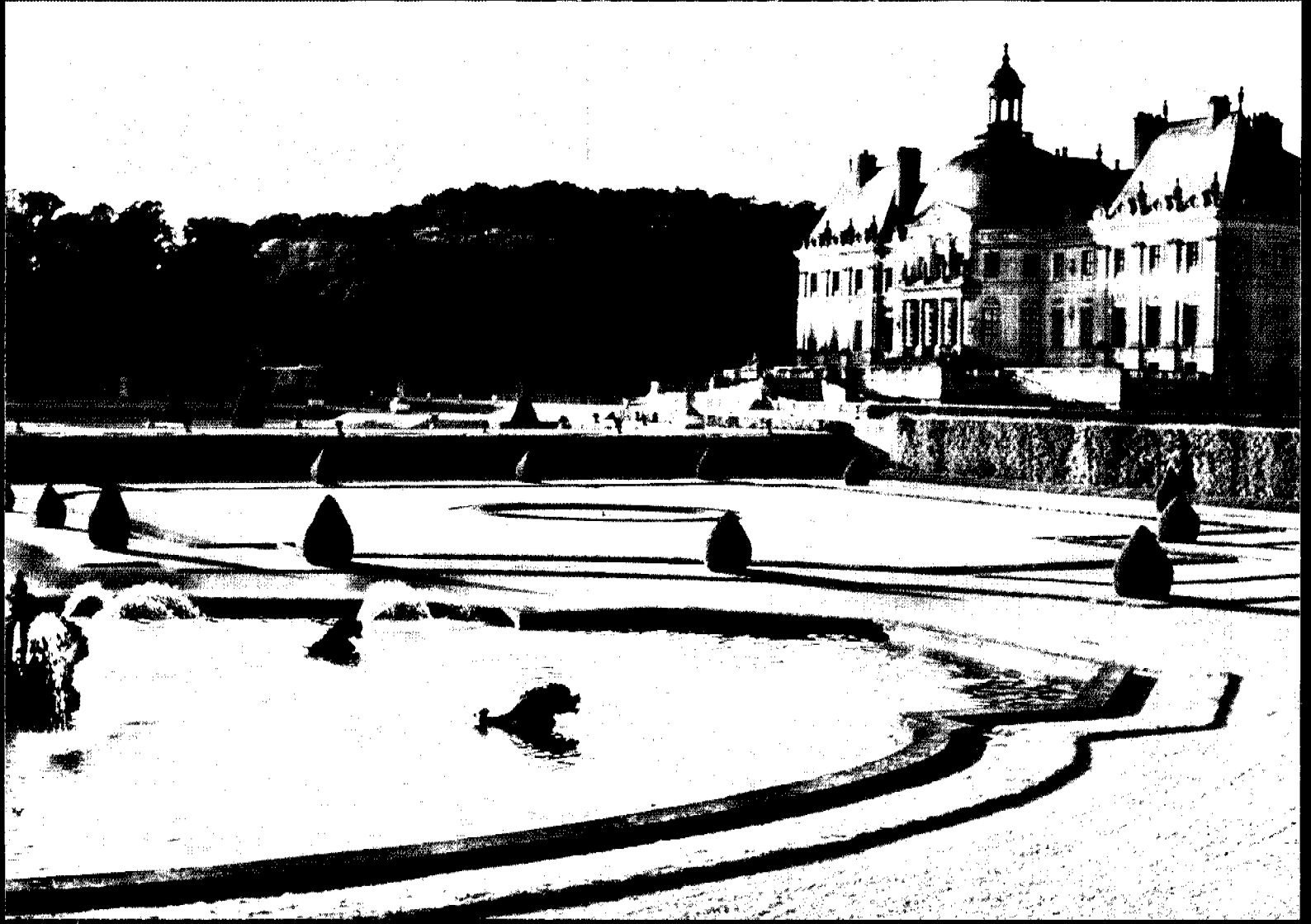
## *Water in ornamental gardens*

The ornamental garden is generally an enclosed space, landscaped by humans, planted with trees and flowers, embellished with lakes, basins, pools and various fountains, and designed for the pleasure of the senses.

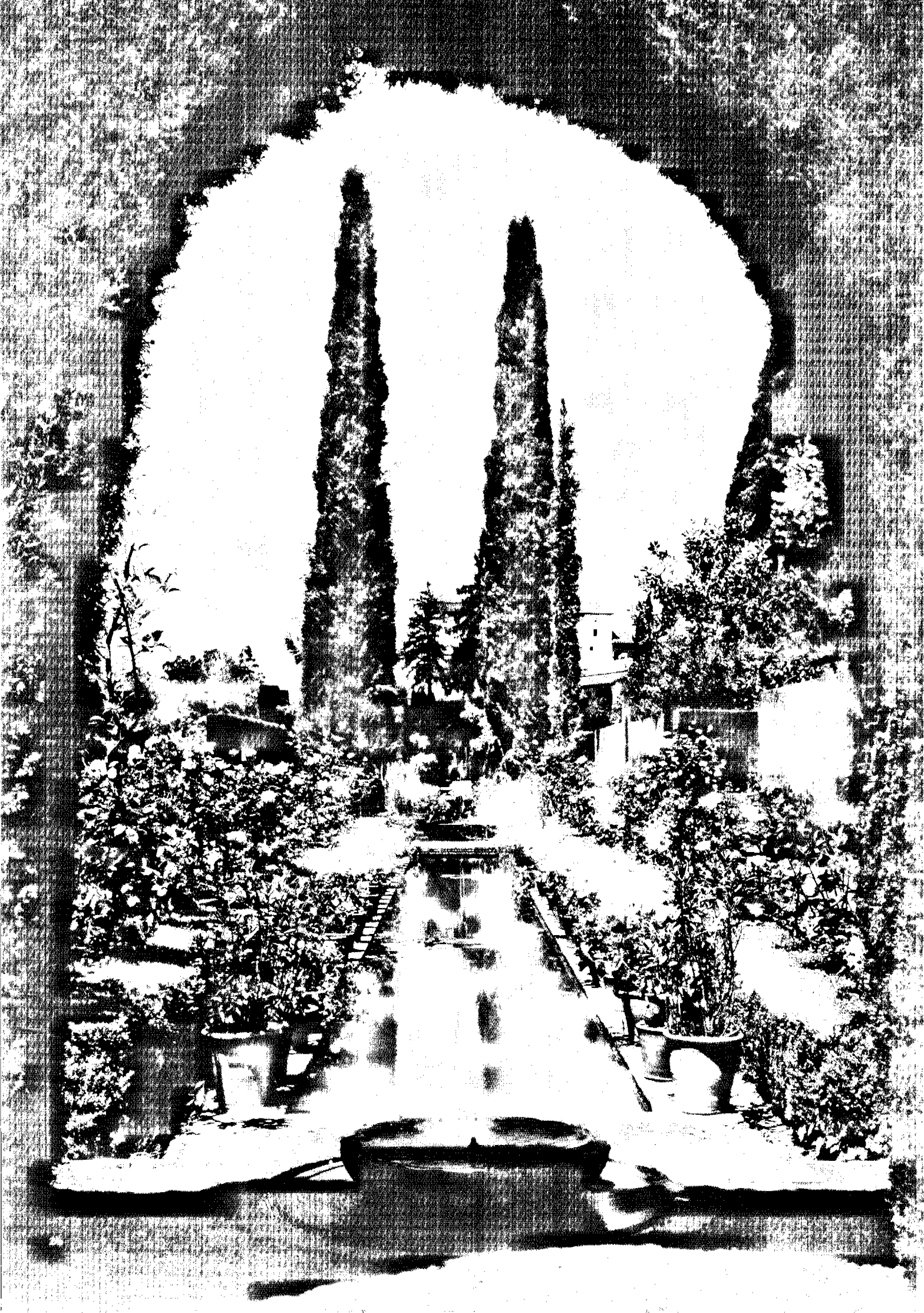
In all ages throughout the world, water has been an essential element of the garden, not only from a utilitarian point of view, but also from an aesthetic and highly symbolic one :

- The French garden is one in which nature is tamed and where order, symmetry and geometrical perspectives reign. The most beautiful example is found in the gardens of the Château de Versailles, magnificently designed by Le Nôtre, the founder of the garden "à la française", and characterised by open views stretching to infinity and gushing waters. The number of fountains, pools and lakes meant that a huge network of channels had to be built on the plateau from the Rambouillet forest and the "Marly pump" was designed to raise and transport water from the Seine to the château reservoirs.











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A special Versailles Water and Fountain Department was set up, and it is still in existence three centuries later! Spectacular water displays accompanied by fireworks at the Basin of Neptune are still very much appreciated today by the French and many foreign tourists.

- The English garden is designed with consummate artistry, a carefully designed plan hidden beneath a rustic appearance.

- Arabic gardens are the distant heirs of the famous hanging gardens of Ancient Babylon on the banks of the Euphrates. For many centuries, these gardens flourished from the southern Mediterranean to southern Spain: among the most beautiful are the magnificent gardens of the Alhambra, in Grenada, the long-term residence of the Moorish kings. These gardeners must have had great knowledge of poetry, as well as the practice of their own art! The heart of the Arabic garden contains fountains and pools, delicately decorated with mosaics, stones and metals. The word "paradise", derived from the Greek, comes from the Persian word "pairidaeza" meaning "walled garden"!

- Japanese gardens are highly stylised and codified in which water plays a major emotional, aesthetic and symbolic role, resulting in a place eminently suitable for philosophical and religious meditation. The Japanese botanical garden is thought to have originated either from the myth of a god descending on a large rock, or from the idea of building an island in the middle of a pond to worship a god. This explains the principal elements of the Japanese ornamental garden, namely stones, a hill and

pond. It is also generally accepted that the garden was originally designed as a place of residence for the gods. The Japanese garden very often has a pond or stream, these elements marking the boundaries of the sanctuary. Water is a familiar element, and the garden symbolises the management of water in miniature. Together with the Chinese, the Japanese share a respect for natural forms through the convergence of Shinto and Buddhist influences. Art is always based on Nature which nothing can surpass the beauty of. They were originally inspired by the indented landscapes of their island coasts. In addition to ponds and lakes, the first Japanese gardens had hills of rocks imitating creeks and promontories. For example, the temple garden on the island of Itsukushima includes the sea within the sacred design created by the Jodo sect. Only the initiated, that is the priests of the island divinities, could enter it by covered bridges.

The waterfall, another distinctive trait of Japanese gardens, is always a faithful reflection of its natural origins: in accordance with the topography, it turns from a mountain torrent into a series of small falls on reaching the plain. In particular, its design obeys rules related to the volume and force of the water, and rock location and size; it is the gardener's job to harmonise these disparate elements so that the waterfall looks as though it has always been a part of the landscape. At the base of the waterfall there is usually a pond to encourage meditation and contemplation of nature. Stepping stones - with carefully designed spacing - link the pond with the garden. This pond is stocked with carp (koi) which are assumed to have great wisdom because of their venerable age; the play of their beautiful colours encourages meditation on the infinite.

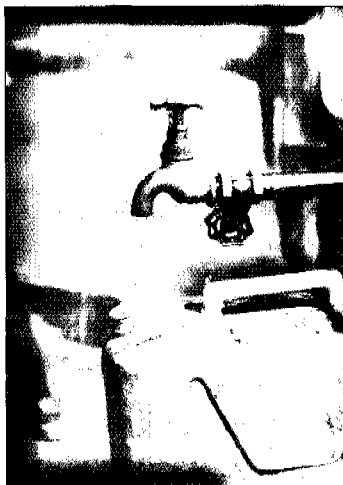


*Landscape garden, England*

# Science, hygiene and health



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Abruzzes, Italy, fountains



Africa

## *Water, the primordial substance*

Many mythologies describe a mythical and infinite ocean as the cradle of the cosmos, the world and life. From the 5th century B.C., the Greek philosopher and mathematician Thales of Miletus, proffered the first "explanation" of the world based on the existence of a primordial element from which everything was derived, namely water. This water should no doubt be seen as a metaphor for an eternal and universal "ethereal fluid" in which everything is bathed and from which everything therefore emerges.

Its combined ability to bring both life and death make water a metaphysical element.

The first truly physical description of the world based on the theory of the four elements (earth, air, water and fire) was put forward by the Greek philosopher Empedocles, in the middle of the 5th century B.C. His theory lasted until the end of the 18th century.

## *The element water is transformed into H<sub>2</sub>O*

Après un travail opiniâtre et systématique sur la théoAfter persistent and systematic work on the theo-

ry of the four elements, the French chemist Antoine de LAVOISIER clearly demonstrated in 1785 that water resulted from the union of two "aeriform", or gaseous, substances that he named oxygen and hydrogen.

He also established that decomposition of water resulted in the formation of these same two substances. From 1764 to his death in 1794, through the use of ingenious experiments, LAVOISIER demonstrated that the medieval theory of the four elements did not stand up to rigorous analysis.

This marked the collapse of a belief over two thousand years old which had assumed that water was an indestructible element.

During the Enlightenment of the 18th century, a radical change in thinking came about, encouraging people to think of hygiene as a rule to be respected, in particular in relation to disease and the spread of epidemics. Surveys were conducted from 1790 in Parisian hospitals on water supplies, the existence of showers, steam-rooms, bathrooms, etc. These were, however, still very general concepts of hygiene, without any real scientific foundation.

During this period, people knew that epidemics of cholera and typhoid fever could be spread by water, that generally speaking water from wells was more dangerous than the moving water of rivers, and that wastewater should be separated from water for human consumption.

It was only a century later, however, after the discoveries of PASTEUR, that the bacteriological purity of water was understood to be just as important as its chemical purity.

Chemical discoveries at the end of the 18th century, particularly related to the structure of water and chlorine, in combination with technical progress on materials and metallurgy, made it possible to construct proper water pumping, filtration and purification stations, as well as the piping to transport it.

Today everyone knows that the chemical notation of the water molecule is written H<sub>2</sub>O, meaning that the molecule is formed from the combination of two hydrogen atoms and one oxygen atom. Discoveries made after those of Lavoisier confirmed the validity of atomic theory, and then the reality of atoms themselves, thus giving concrete meaning to the notation.

Although this formula is remarkably simple, the substance itself has proved to be highly complex.

Once the formula of water was known, meticulous studies were made of its chemical properties, reactivity and ability to dissolve all kinds of salts.

Chemists analysed and synthesised a large number of simple-structure molecules; in general they obtained simple, gaseous, non-reactive products but none of them had the astonishing properties of water.

In the 20th century, thanks to the progress of atomic theory, scientists started to understand more about the nature of the inter-molecular links responsible for the very particular properties of water; however, even today, it still holds mysteries for physicists and chemists.

## The water cycle

The existence of a water cycle has been debated for many centuries. It appeared incomprehensible that relatively limited precipitation could maintain the permanent course of rivers. In the middle of the 17th century, Pierre PERRAULT attempted to make a comparison between the volume of rainfall and the course of the Seine. In 1680, MARIOTTE measured the precipitation over the entire Seine basin and came to the conclusion that it corresponded to the river's volume of water (*Traité du mouvement des eaux et autres corps fluides*, 1686).

The water cycle, responsible for climate, precipitation and all its consequences, is simple only in name. A brief description of it does not reveal the extreme complexity of the different elements which combine together to operate this powerful thermal machine transporting water, air and particularly energy.

Water is the predominant element on the surface of the Earth, largely due to the oceans. Fresh water, although abundant, only represents 2.5 % of the total amount of water available; the ice of the two poles represents two thirds of the total volume of fresh water.

In terms of human use of water, 65 to 70 % is currently used for irrigation in industrialised countries and up to 80 % in agricultural countries. Agriculture therefore consumes huge amounts of water: 1500 litres of water is needed to produce 1 kg of wheat grain, 4500 litres for 1 kg of rice and almost ten times more for 1 kg of meat. And it really is consumption, as only a small part (less than 25 %) of the water used to irrigate fields is then returned as run-off, and this is often polluted, the rest going into the atmosphere through evaporation and transpiration.

## Water, hygiene and health

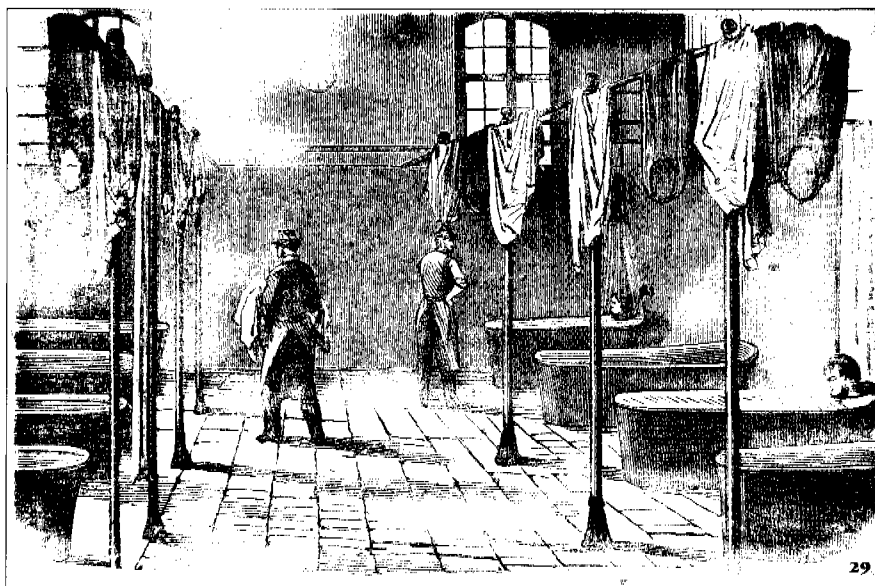
As the human body is mostly made up of water, we need to constantly replace what we lose in order to stay alive. We can survive for a long time without eating, but not without drinking, and many people cannot imagine being deprived of water. In developed countries, we take showers, flush toilets, do the dishes and wash our clothes at great cost. Here water has become a standard commodity, accessible through the intermediary of an almost magical pipeline.

Humans have always searched for the best sources of drinking water, even before the birth of Egypt, Carthage and Rome. The statesman Aristotle and Epiphanius, the father of the Church, praised the spiritual value of water from the Nile, as well as its beneficial powers. Aristotle remarked that the Egyptians treated water from the Nile as others would wine, bottling it and keeping it for several years; he noted that they were proud of the age of their bottled water. Epiphanius was persuaded that the water of the Nile turned into wine, and this was why the Egyptians collected it in earthenware jars on the day of Epiphany. They often bottled it and sent it by sea, sometimes as far as Rome.

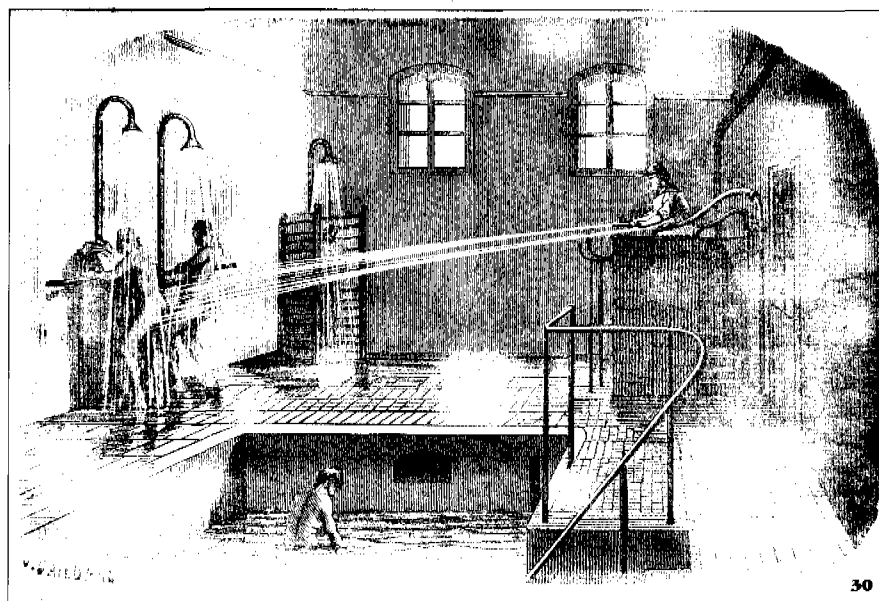


*Cholera scene, France - 1834*

Water was one of the panaceas of Antiquity, and drinking it was just as important as external treatment. Many made long journeys with the sole purpose of tasting the water from certain well-known springs.



*Psychiatric hospital, The bathroom, France*



*Psychiatric hospital, Hydro-therapy, France*

# Science, hygiene and health

When things are easily accessed however, they lose their original power. The domestic use of water in modern environments has removed its sacred character. The product water has become nothing more than a "fluid cleaning body" which has lost much of its symbolic meaning and no longer inspires the same respect from us. In the past, people honoured it more, as they still do today in certain regions of the world.

Water is not only beneficial for health and an effective remedy against physical ailments, it also plays a useful role in the area of psychotherapy. Asclepius or Esculapius, the Greek, then Roman, god of medicine and of notheapia, or therapy of the spirit, prescribed baths to heal mental as well as physical problems. The treatment centres of Esculapius were set up to purify body, spirit and soul. From the temple of Epidaurus, these centres spread throughout the Greek, Egyptian and later Roman world. It was here that Hippocrates and other doctors from ancient Greece and Rome used methods which were then abandoned for almost two

millennia, but which are gradually reappearing in modern medicine.

In tropical regions, particularly in sub-Saharan Africa, water-borne diseases continue to be a major endemic problem. For example, malaria, at one time thought to be eradicated, is one of the principal causes of mortality there, spread by mosquitoes breeding on stagnant water.

## *Communion with water*

Bathing culture closely reflected the attitude of those who devoted themselves to it, not only in terms of how they viewed their bodies, but also in relation to nudity, relaxation, beliefs, sin and religion. Most societies developed different ways of creating physical contact with water which matched their philosophy of life, the habits of their citizens and their organisation. It seems that they also took into account their religious, hygienic, therapeutic and social beliefs in this process. Only some of them considered bathing to be an unpleasant chore and found it easier to stay dirty rather than wash in water.

## *The principal bathing traditions*

The role of bathing in culture clearly reveals the attitude of societies to bodily relaxation. It can be used to measure to what extent individual wellbeing was considered an essential component of community life.

From 1800 B.C., the Minoans used bathtubs of baked earth very similar to our own. The palace of king Minos in Cnossos had a well designed network of ceramic pipes to distribute both hot and cold water. The Minoans took their ablutions very seriously and were well versed in the exploitation of water. In addition to bathtubs, they also had flush toilets. The excavations at Mohenjo-Daro in Pakistan and Tell-el-Amarna in Egypt have also revealed the existence of sophisticated bathrooms with piping and very advanced showers. Such innovations were intended for more than simple comfort as they helped combat the diseases favoured by the density of the urban population, and were an integral part of the ceremonies of the religious community. The priests of Tell-el-Amarna, for example, washed themselves from head to toe twice a day.

Wealthy Egyptian also enjoyed the luxury of individual bathrooms. They installed shallow bathtubs with a kind of shower and added oil and perfume to the water.

The Greeks and Romans appreciated public baths, but those who could afford it also had their own personal



Public baths in Asia.



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People bathing, U.S.A



*"The bath", France*

bathrooms. The Greeks had tubs in which they stood up; water fell from gargoyles above them or was poured over them by servants.

The Greeks encouraged cleanliness, but for them bathing was not an idle pleasure. They bathed after intense physical effort and before starting intellectual discussions which took place in the "gymnasia", venues for philosophical debate at the time of Plato, the founder of the Academy in Athens.

Never before or since has bathing given rise to such magnificent ceremonies as those practised under the Roman Empire. It was the Latin poet Juvenal who coined the saying "Mens sana in corpore sano" (a healthy mind in a healthy body). The Romans took this maxim to heart and put it into practice with conviction. They sought harmony between their different abilities, and created environments intended to maintain this balance. Roman baths combined the desire for physical health, social relationship and entertainment. These bathing establishments were real institutions and reflected an almost religious conception of health. Their sophisticated and refined practices resulted in the creation of imposing mausoleums and architectural buildings, such as the baths of Diocletian and Caracalla, the natural consequence of an essentially hedonistic approach to life. Without the opposition of strong moral values, the baths ended up encouraging excessive sensuality, and the public bath eventually underwent the same fate as the "Pax Romana".

For Nordic peoples, the sauna had both a spiritual and social role. It was not simply a place in which to sweat and splash yourself with water, but also a place of healing. To exorcise demons, the possessed were beaten with a "vihta", a bundle of birch twigs, until the evil spirits took flight.

The early Muslims were persuaded that the relaxation produced by bathing helped them uncover truth, and were attracted by the possibilities of meditation and encounter that it afforded. Bathing establishments, or

hammams, became the Islamic temple of water, and regeneration was a spiritual exercise.

During the golden age of Baghdad, the city boasted thirty thousand public baths. The wealth allowing such luxury came from the waters of the Tigris and Euphrates. Alexandria had four thousand public hammams.

The shower first appeared in Europe in the 16th century. "Here there is enough to drink and also enough to bathe in. A covered bath, vaulted and dark, half as wide my own room", wrote Michel de Montaigne during his stay at La Villa in the summer of 1581.

In the 17th and 18th centuries, perfumed steam bathes were very fashionable in France. They were connected to the shops of barbers, considered at the time to be healers, who often recommended hydrotherapy. However, in most of Europe, bathing was little practised. Even at the beginning of the industrial revolution, new technology did not immediately allow bathing: the absence of pipe-work made domestic hygiene impossible.

As public bathing became taboo, individual bathrooms came into their own in the history of bathing. Changing attitudes toward the body over time have been reflected in the endless variations seen in the rooms used for washing, grooming and beautifying.

The permanent installation of bathtubs in houses was one of the principal social and architectural breakthroughs in the history of bathing.

The Japanese have always practised bathing as a way of maintaining the balance between the forces of the nature. They sit in open-air tubs to meditate on the harmony of opposites, the Tao.



*Japanese bath*

## Conclusion

This new strategy will combine respect for the universal principles of modern water management adapted to local conditions on a case by case basis, with particular emphasis being given to the culture of the citizens in each country.

The above discussion has shown the complex relationship that humans have with water. The importance of the behaviour of citizens and users in relation to water has been clearly illustrated. It is through their direct involvement that this precious resource, both for humans and their environment, can be preserved and made available to all.

It is clear that management and use of water depend as much on the cultural context as on the resource itself. The cultural dimension is fundamental as it conditions our mentality, attitudes and behaviours. In addition, the wider and more active participation of users in decision-making processes means that everyone needs to clearly understand the deep connections linking humans with water.

The objective is therefore to analyse and understand the behaviour and relationship of various users to water, in order to better listen to their needs, so that water can be managed in accordance with their requirements.

Consideration should be given to the way in which people use water based on their roots and culture, this being closely tied to geographical and historical conditions as well as religion, even if the latter is not practised. As recommended by UNESCO, cultural diversity must be respected. It is an asset for everyone, and by taking the requirements and traditions of those concerned into account, successful water management is much more likely.

Any desire to rank cultures hierarchically or to attempt to unify them is a pointless task. Each culture corresponds to the identity of a group of individuals. Water management needs to adapt to culture in order to be effective over the long-term, and not the other way round.

Consultation must be used to understand and determine the feelings of citizens on the important issues related to water management, such as protection of the environment, water rights, solidarity between rich and poor, and ways of overcoming water-related health risks.

If all these points are clearly understood, the following can be implemented:

- forms of consultation appropriately adapted to the various cultures involved,
- a way of distributing non-partisan information on water to users,
- adaptation of water education to the citizens of each culture, and finally a "new water management strategy".

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