

Groundwater in the Celtic Regions:
Studies in Hard Rock and Quaternary Hydrogeology

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**Groundwater in the Celtic Regions:
Studies in Hard Rock and
Quaternary Hydrogeology**

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Introduction

Our perception of our environment and the ways in which it varies and evolves through time depends very much on our daily priorities. Geologists are happy to think about eras of millions of years, hydrogeologists routinely consider thousand year periods, historians are concerned with centuries, and human consciousness exists over a period of between six months and a hundred years: three generations generally mark the limit of our collective memory and understanding of our lives. Interaction between man and the environment may lead to conflict, precisely because of the different time scales over which natural phenomena and human society exist. In hydrogeological terms, groundwater reserves which have taken centuries or millennia to accumulate can all but disappear within a few years due to over-abstraction, while groundwater pollution which can occur in minutes or hours (such as an accidental spillage of petrol or industrial chemicals on permeable ground) can take many years or even decades to remediate.

Our use of groundwater is not only a modern phenomenon. There is a wealth of evidence that groundwater has been important in the Celtic regions for many thousands of years. Various Celtic societies have occupied large, though decreasing, areas of Western Europe since at least the eighth century BC: the few groups existing today on the edge of the Atlantic Ocean are only the remnants of a much larger pre-historical culture. The long history of European Celticity has left a legacy of place names and words associated with the earlier Celtic culture. Many of the myths and religious beliefs of this culture, particularly those associated with the supernatural or 'other world', focused on water, both surface and groundwater. Clues to these beliefs can be read in the remnants of Celtic languages which survive into modern times as names of places and environmental features.

Analysing words and how their meaning changes over time is one of the mainstays of historical linguistic studies. Part of the fascination of such studies is that we can use language explorations as echo-sounders into a hidden past to try and understand the mind-set of vanished peoples. By trying to interpret the cultural associations attached to words which survive from ancient languages, we attempt to gain insights into the social reality of past societies.

One important aspect of the history of societies has been that of cultural and linguistic over-writing, as earlier languages gradually gave way to replacement tongues. For the European Celtic languages this process started in North Italy around the third century BC, to be followed by Switzerland and South Germany (replaced by German or Romance tongues), Gaul and Spain (replaced by Latin, itself later changing to the modern languages of French and Spanish). It began in England in the sixth century AD as native Celtic began to be replaced by English, a process completed within a few hundred years, and has been observable in the remaining so-called Celtic fringes of the British islands from around the fourteenth century. These changes normally occur across at least several generations of bilingual speakers, giving rise to a replacement pattern which ranges from monoglots through several generations of bilingual speakers, to finish with monoglot replacement speakers. The vital linguistic link in this chain is the duration and extent of the period of bilingualism, which allows the names of objects and ideas important to a society to be filtered across the barrier of language shift. In a gradual process, which may extend over several centuries, culturally important words from the original languages, such as place names, can retain traces of their original meanings in the new overwriting culture. The linguistic identification of the roots and origins of particular words and names allows us to make the suggestions we do about their earlier cultural importance.

The Celtic supernatural world, peopled with gods and goddesses, acted as a link between their physical surroundings and those of their religious beliefs. Fundamentally, Celtic religion had a chthonic basis, with an underground other-world, unlike the religions of the Mediterranean peoples where the sky was the abode of gods. Archaeologists tell us that another difference between early Celtic cultic practice and that of their Mediterranean neighbours was the paucity (or perhaps historical loss) of large numbers of built temples as sacred places for worship. Celtic religion appears to have used parts of their natural environment as sacred sites, particularly forest clearings. In addition, sunk shafts (some more than 36m deep) appear to have been associated with religion, and although their

precise cultic purpose is uncertain, they do show evidence of ritual deposits, including the remains of sacrifices to the gods.

It is a short enough cultural transfer from this ritual use of shafts, which must often have been prone to filling with water, to a belief in a relationship between gods and underground water. From here, an extension of belief to the more general notion of the water-surface as representing an interface between the world of everyday reality and the supernatural world seems to follow easily. Later in history, from the maritime as opposed to the continental areas of the Celtic world, we find in Ireland ideas such as *Tír na nÓg*, where the otherworld of unchanging youth is located in the western ocean. This must have been a way for the Celtic peoples of Ireland to come to terms with the terminal edge of their physical world. The inhabitants of Celtic Britain and Ireland appear in general to have believed that large areas of water – the sea or inland lakes – contained in their depths representatives of an otherworld (*Tír fó Thuinn*), whether in human form or in monster shape. The Celtic Sea was interpreted this way in Welsh tradition, and even today myths surrounding both Lough Neagh and Loch Ness attest to such beliefs.

It is easy to accept that the presence of underground water, and its emergence through wells or springs, represented a boon from the otherworld, and there is clear evidence for a Celtic interpretation of rivers as representatives of this chthonic world. Thus we find numerous examples of the names of female deities being given to rivers across the wider Celtic world. River names are a regular carry-over between one culture and its replacement: names such as Seine (*Sequana*, goddess of healing) and Boyne (*Boann*) are indications of this connection with goddesses. The spring sources of rivers were especially revered, and at the spring site of *Sequana* on the Châtillon Plateau in Burgundy many votive deposits have been found, including bronze and silver models of parts of human bodies deposited as requests for healing. Even without a direct connection with a river, wells and springs have been recognized for centuries as objects of veneration within Celtic countries (or in their replacement cultures), particularly for their reputed healing properties, as indicated by the nineteenth century example of Lourdes and other such religiously over-written sites. The words *tobar* (Irish, Scottish Gaelic) and *ffynon* or *puddew* (Welsh) are used for well names in these areas of the British Isles. Although hydrogeologists have an interest in wells or spring sites for their own purposes, any survey of such sources should include not only the necessary scientific

analysis, but also record any local names given to wells or springs. Such language data would potentially serve to enhance relationships between the two disciplines, and perhaps allow us to extend our understanding of the historical continuity of relationships between the Celts and their water sources.

Above ground, the lake (*loch*, *llyn*, *llyn*) acts as a natural reservoir, both physical and cultural, for its surrounding population, and here also we find evidence for the ritual use of lake sites across the Celtic world. In Continental and Insular Europe they were considered as important repositories for votive offerings, including human sacrifices. In the main such deposits consist of swords and other weapons, with their blades usually bent almost in two before deposition, to demonstrate that they were no longer functional in this world and that they took on the rôle of an offering to the otherworld. Lake Neuchâtel in Switzerland is an excellent type site for this practice, as projecting into this lake in the vicinity of La Tène a wooden platform was erected to act as a site of votive deposition. Several hundred brooches, spears, shields and swords have been recovered from its vicinity on the lake bottom.

In 106 BC the Roman general Caepio was sent with an army into South West France (*Gallia Narbonensis*) to put down a revolt. Like most other such generals in history, he took advantage of the opportunity for plunder after sacking the town of Tolosa (*Toulouse*), by seizing its sacred lakes and instructing his engineers to drain these and remove the votive treasures – mostly gold – deposited there. These materials had remained untouched by the Celtic inhabitants, being considered in much the same way as we would envisage our church or civic treasures nowadays. This is probably the earliest recorded instance in Europe of pollution of a water site, with a clear indication of the original meaning of pollution with its ritual significance. It was also, as is usual in such cases, carried out for financial gain, though no doubt there would have been Roman spin doctors to argue that the removal of such heavy metal pollution from the lake was of considerable benefit to its biological population, whether flora or fauna.

The papers in this volume indicate a concern with water abstraction and its use in what are essentially maritime environments, on islands with a broadly common geographical situation far removed from the original European homelands of the Celtic peoples. It is clear that on these islands we share a vulnerable hydrogeological situation, as well as an interrelated social and cultural history, and a shared understanding

between scientists and humanities specialists can only be to our mutual benefit. In the 1960s, a local resident of West Town on Tory, a small granite island off the north-west coast of Donegal, revealed how proud the inhabitants were of the only well in the village, 'which had never run dry'. Boons from the ground are as welcome and necessary today as they were 2500 years ago to our ancestors. With modern exploration and drilling techniques and the construction of deeper boreholes we can reach much further into that Celtic otherworld to seek these boons.

As well as their common history, this volume emphasizes the shared environmental heritage of the remaining Celtic regions. It also illustrates the hydrogeological issues shared with the wider world. Today we are more likely to find elevated

nitrites or chlorinated solvents in Celtic wells than votive offerings, and the impacts of global climatic change are also likely to be felt in the maritime Celtic environment. The preservation of useable water resources, both above and below the ground surface, is not a short term problem, and we all – in the humanities and the sciences – must attempt to develop and consolidate our understanding of a world which we currently tend to view exclusively through the separate lenses of individual subject perceptions. It is on this shared stage that we all must live, as a potential future without common access to useable water is untenable for all of us.

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