Exploring past people's interactions with wetland environments in Ireland

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Abstract

People have engaged with Ireland's wetland environments since the earliest times, leaving a unique, fragile and valuable archaeological and environmental legacy. A long history of antiquarian and archaeological investigation of Ireland's wet environments has established a good understanding of this archaeological resource, but ongoing industrial development, land reclamation and climate change continues to threaten its integrity. Multidisciplinary approaches, ongoing survey and excavation and a theoretically engaged study of this wetland archaeology will continue to enable us to explore aspects of settlement, travel and ideologies in Ireland's past, fulfilling this archaeology's significant potential for reconstructing the details of past lives and societies, the perceptions and uses of landscapes and the social, economic and ideological roles of material culture across time.

Introduction

In the past, some of the most striking archaeological discoveries on this island have been made in its wetlands, whether they are Iron Age human remains or trackways in bogs; early medieval crannogs and dwellings in lakes with their abundant collections of objects; or intact late medieval wooden fish-traps and baskets quietly eroding out of estuarine mudflats. Archaeological survey and excavation in wet environments can uncover spectacularly well-preserved dwellings with their occupation and midden deposits present; or wooden vessels with their tool-marks surviving and traces of their last contents within them. Protected from the annihilation of time by their anaerobic, waterlogged environments, the sense of wonder that these discoveries evoke is often traceable to the fact of their unlikely survival and existence (e.g. Ó Floinn 1995; Raftery 1990, 1996, 1999a; O'Sullivan 1998, 2003a, 2003b).

Archaeological discoveries in wet environments

Archaeological sites in wet environments in Ireland and elsewhere are also empirically valuable and arguably more informative than other archaeological sites due to the much wider range of evidence that they produce (e.g. Coles and Coles 1989; Coles 2001, Fig. 14). Archaeological excavations can reveal significantly more about past environments and their changes; a wider range of evidence for past economy and subsistence; a fuller understanding of the structures, stratigraphy, chronology and organisation of dwellings and a more intact assemblage of past material culture—such as the clothing, basketry, organic bindings on tools and wooden and leather

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objects that will rarely survive on a dry-land site (Coles 2001, 23–36). Indeed, it is well known that prehistoric and early historic material culture was mostly derived from organic materials. For example, the archaeological investigation of Ötzi the Ice-man from the Alps has revealed that the overwhelming majority of Neolithic objects that he used (i.e. his clothes, weaponry and portable raw materials) were made of furs, hides, grasses and wood with a tiny proportion being made of flint and metal (Spindler 1994). Similar wetland archaeological discoveries in European lake dwellings also demonstrated that most material culture was organic in its origin. This is what we have lost from most dry-land archaeological sites (e.g. Coles 2001).

Environmental archaeology and wet environments

To these archaeological discoveries can be added the potential contributions of environmental archaeology (a discipline that is particularly enabled by waterlogged conditions) with its ability to reveal hidden things about past lives and landscapes (e.g. Coles and Coles 1996; Caseldine *et al.* 2001; Caseldine 2005; Murphy and Whitehouse 2007). Environmental archaeological investigations in Irish wet environments can enable reconstruction of past ecological habitats and economic practices (Monk 2007; Caseldine and Geary 2007; Plunkett 2007); an understanding of past woodland histories, species selection and woodland management (O'Sullivan 1990; Stuijts 2007); the faunal evidence for past mammal, bird, fish and insect life (e.g. McCormick 2007; Hamilton-Dyer 2007; Murray 2007; Reilly 1996, 2005; Whitehouse 2007) and an investigation of past people's cultural and economic choices and uses of plant resources (McClatchie 2007). Environmental archaeological analyses of waterlogged dwellings can reveal the conditions that pertained there; the fleas and flies that pestered a householder and the human dung that lay outside, as well as the full range of dietary, industrial and economic debris left by daily life and practice (Crone 2000; Coles 2001; Coles and Coles 1996). Chronological patterns of site construction, use, refurbishment and abandonment can be constructed more accurately using abundantly available samples for radiocarbon dating (Barratt and Reimer 2007), while dendrochronology can establish the precise year a wooden structure was built, when and how often it was repaired and when it was probably abandoned (O'Sullivan and Van De Noort 2007; Brown and Baillie 2007).

Theoretical and interpretative approaches

Almost literally swamped in such archaeological and environmental riches, it has been suggested that wetland archaeologists in Ireland or elsewhere have tended not to engage with wider interpretative or theoretical debates, hindering the wider applicability of their research in reconstructing past social and cultural histories (Fredengren 2002, 59; Van de Noort and O'Sullivan 2006). It is certainly true that a more theoretically engaged wetland archaeological practice can contribute to a closer understanding of people's past choices and agencies; exploring how people perceived and understood their landscape not merely as a environmental larder for economic exploitation, but as a storehouse of traditions, knowledge and values (Van de Noort and O'Sullivan 2007, 282). This is not to say we should move away from empirical archaeological and

palaeoenvironmental studies. To understand a site's social and ideological role, we must reconstruct its function, its site history, subsistence and relationship to wider climatic and environmental conditions (Plunkett and McDermott 2007). The finer environmental and chronological evidence can then be used to construct cultural biographies of dwellings and objects, exploring their shifting social and ideological meanings from 'birth', through their use lives, to the 'death' and abandonment (Gosden and Marshall 1999; O'Sullivan and Van De Noort 2007, 71–2). Using the enhanced archaeological record, or through phenomenological approaches to wetland sites in their landscapes, we can investigate how people might have constructed a sense of identity and belonging through their daily or seasonal, practical and knowledgeable relationships with these dynamic wet environments (e.g. Van de Noort and O'Sullivan 2006, 65–88).

A bottomless wet center?: the realities of Ireland

However, while wetland archaeological discoveries in Ireland are worthwhile in themselves, it is also true that they must be brought into the broader narratives of past human activity on this island—across all its environments. On the other hand, it is also worth stating that any story told of past human societies on the island of Ireland also has to make some attempt to describe how people in the past lived with, moved across, or understood the waterlogged environments that surrounded them. This is because in the past (like the present), living with wet environments was almost unavoidable in Ireland with its raised bogs and fens of the Irish midlands; the callows, flood plains, lakes and alluvial wetlands of the island's rivers and estuaries; or the salt-marshes and mudflats of its coastal wetlands. This is a wet country; its climate of high effective precipitation, topography, heavy soils and sluggish drainage all conspire to make this island a damp and boggy place. Unlike many countries, we have no boundless plains, endless forests or icy tundra. What Ireland abounds in are wetlands—such as its bogs, fens, lakes and salt-marshes (e.g. Feehan and O'Donovan 1996; Doyle and Ó Críodáin 2003; Otte 2003; Curtis 2003), as well as some wetland types such as river callows and turloughs that are almost unique to Ireland (e.g. Heery 2003; Goodwhillie and Reynolds 2003). Thus, Seamus Heaney has written (in *Bogland*, one of several of his poems about bogs and their secrets, see Heaney 1990):

> We have no prairies
> To slice a big sun at evening--
> Everywhere the eye concedes to
> Encroaching horizons,
>
> Is wooed into the cyclop's eye
> Of a tarn. Our unfenced country
> Is bog that keeps crusting
> Between the sights of a sun. ...
>
> Every layer they strip
> Seems camped on before.
> The bogholes might be Atlantic seepage.
> The wet center is bottomless.

After briefly detailing the history of archaeological investigations in wetlands in Ireland, this paper will explore three major themes: the dwelling in and inhabitation of wetlands; movement, travel and work in wetlands; and the role of wetlands as boundaries and liminal spaces. Throughout, I will attempt to explore how people have interacted with these dynamic, wet environments across time and how by investigating such practices and routine activities in these places, we can explore how people lived, what they did and how, even within these dynamic environments, they made their own social worlds. As Clifford Geertz (2000, 16) has written, we can thereby attempt to come to an understanding of who people thought they were, what they thought they were doing, and to what end they thought they were doing it.

Past investigations in wetlands

Peatland archaeology

Undoubtedly, the longest tradition of archaeological investigation in Ireland's wetlands has been in its peatlands (Stanley 2003; Raftery 2003). The midlands, northwest and west of Ireland, while they may not be as bottomless as Seamus Heaney imagined, are indeed dominated by *c*. 13,125km^2 of raised bogs, fens and lakes created by the environmental conditions of impeded drainage, high rainfall and reduced evaporation caused by low average temperatures (Fig. 1). Peatlands formerly comprised 16% of the island's total surface (Hammond 1979; Feehan and O'Donovan 1996; Doyle and Ó Críodáin 2003).

Beginning about 9,000 years ago, after the last glaciation, the shallow lakes left behind in the low-lying hollows created by glacial activity gradually became enveloped in fen vegetation of *Phragmites australis*, rushes and sedges. Ultimately, about 7,000 years ago raised bogs started to form as peat continued to accumulate—giving rise to their characteristic dome shape as they filled in basins and spread across the land. Raised bogs varied in environmental conditions across time, at different periods being dominated by *Eriophorum* vegetation and *Sphagnum* mosses, which often formed hummock and hollow systems. On occasions, when the climate warmed, raised bog and blanket bog surfaces often dried and temporarily allowed the invasion and establishment of woodland (O'Connell and Doyle 1990). It is also likely that originally Ireland's raised bogs (like those pristine examples still known in eastern Europe) were surrounded by minerotrophic wetter 'lagg' zones, where running water from both land and bog congregated (Doyle and Ó Críodáin 2003, 82–92). Raised bogs in other words, have always been spaces of dynamic environmental change. Indeed, it has been suggested, although it remains a focus of debate, that significant climate change events and periods of environmental deterioration, at *c*. 1628 BC, 1159 BC or at *c*. AD 540, may have influenced the intensity of trackway construction (Baillie 1995, 1999; Baillie and Brown 1996). Certainly, at the local scale there is evidence that natural events such as sudden bog bursts had a serious impact upon people's uses and activities in boglands (e.g. Gowen *el al*. 2005).

Generations of Irish farmers have cut turf in raised bogs. The slow, methodical pace of their peat-cutting meant that archaeological discoveries of wooden structures buried deep in the bog were frequent in the nineteenth and twentieth centuries. People knew that these were roadways and often associated them with the ancient

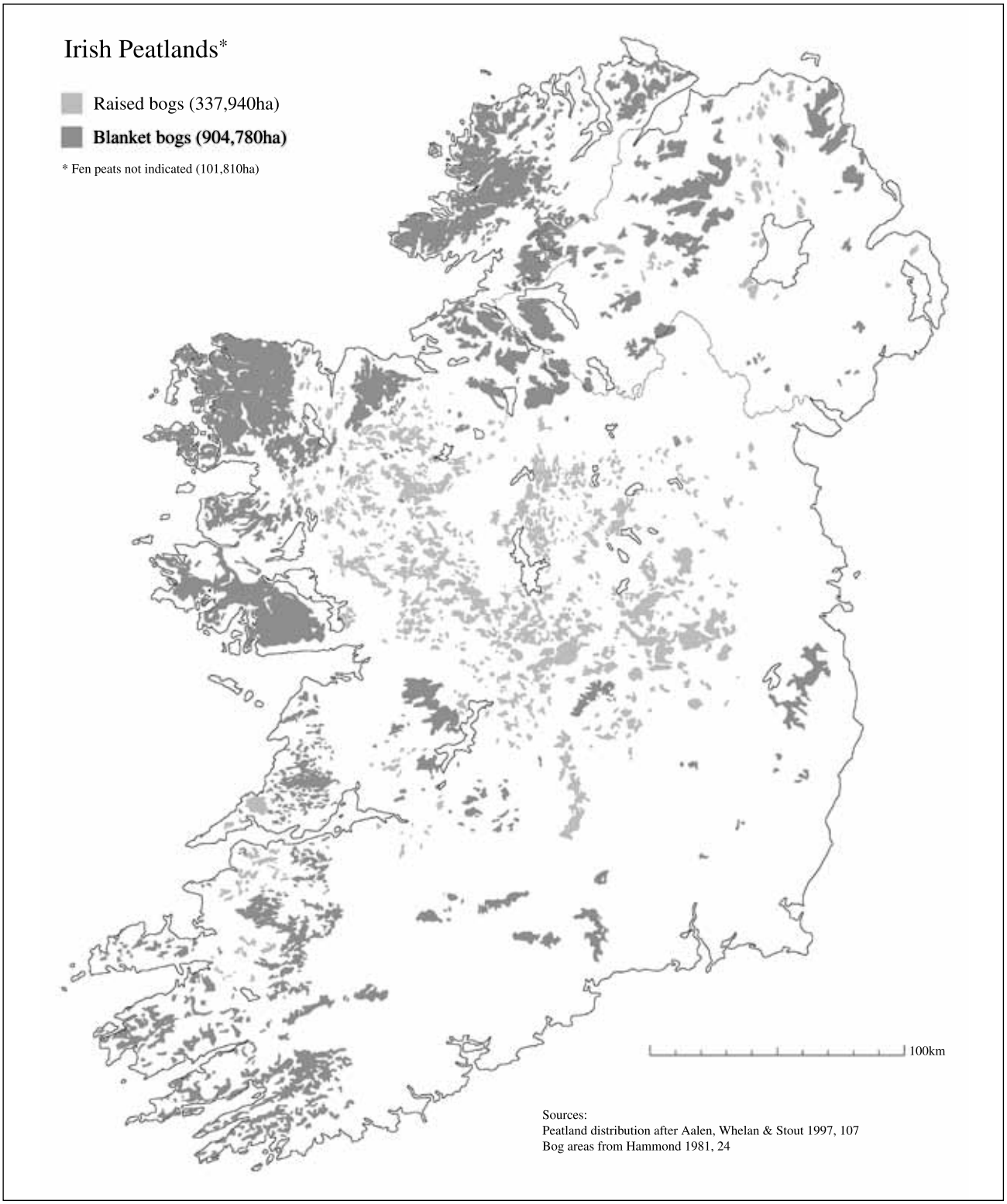

FIG. 1—Distribution of peatlands in Ireland (after Aalen, F.H.A., Whelan, K. and Stout, M. 1997 *Atlas of the Irish rural landscape*, 107. Cork. Cork University Press; Hammond, F. 1981 *The peatlands of Ireland*, 24. Dublin. An Foras Táluntais).

Danes (e.g. Kinahan 1874–5; Fitzgerald 1899; Milner 1909; Macalister 1932). Irish archaeologists generally paid little attention to them, and only a few wooden trackways were investigated (e.g. Price 1945; Prendergast 1946–7; Tohall *et al*. 1955; Rynne 1961–3, 1964–5, 1965; Lucas 1975, 1985). Other discoveries made in past centuries have included stray finds and collections of objects, such as Neolithic stone axes, Bronze Age hoards of weapons, personal ornament and tools, and single finds of Bronze Age and Iron Age swords and bronze cauldrons. Uniquely too, well-preserved wooden objects (Figs 2–3) such as prehistoric wooden and leather shields, carved troughs, wooden dishes and tubs of 'bog butter' and occasional bog bodies indicate the wider range of material culture that can be recovered from wetlands (Eogan 1983; Raftery 1999b, 2003; Lynch 1991).

In modern times, Irish raised bogs have been exploited in a much more industrial fashion, to fit the needs of a growing state. In 1946 the Irish Turf Development

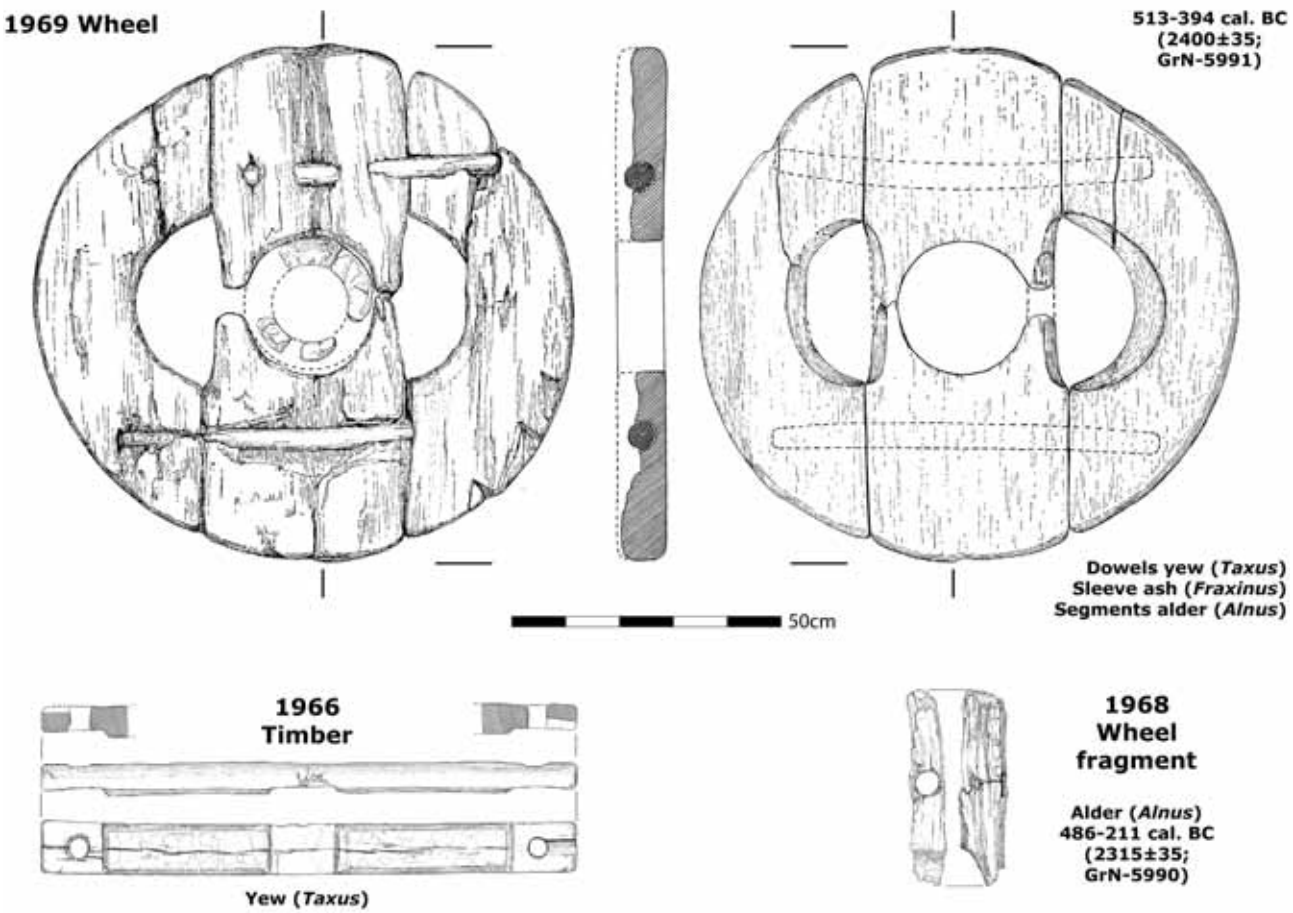

Fig. 2—Late Bronze Age/Iron Age wooden blockwheel (front and back) of alder planks, ash sleeve and yew-wood dowels; a wheel fragment and a yew-wood timber from a bog in Doogarymore, Co. Roscommon (after Lucas, A.T. 1972 Prehistoric block wheels from Doogarymore, Co. Roscommon and Timahoe East, Co. Kildare. *Journal of the Royal Society of Antiquaries of Ireland* **102**, 19–48).

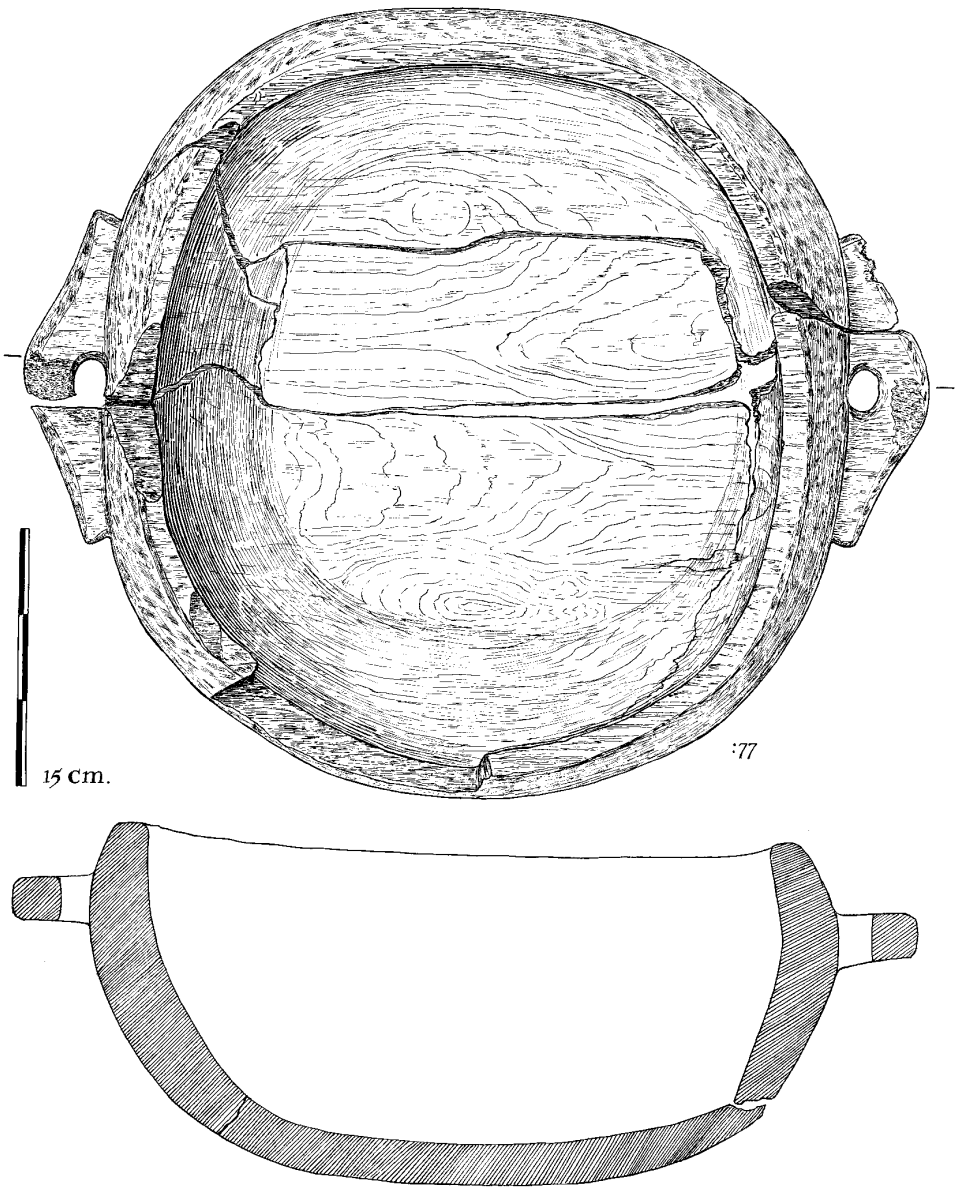

FIG. 3—Iron Age wooden vessel from Coolnagun, Co. Westmeath—found beneath a bog road known locally as 'Sarsfield Road'. (After Raftery, J. and Ryan, M.F. 1971 'National Museum of Ireland: archaeological acquisitions in the year 1968: Catalogue', *Journal of the Royal Society of Antiquaires of Ireland* **101**, 184–244.)

Board (established in 1935) was replaced by Bord na Móna to provide fuel and generate electricity. Bord na Móna owns *c*. 85,000ha of peatland, producing 5 million tonnes of peat annually (Doyle and Ó Críodáin 2003, 97). Irish raised bogs have been largely destroyed by this modern mechanised peat extraction. Whereas they once covered 16% of the land area of Ireland, an area of *c.* 1.3 million hectares, today only a fraction of the original area of Irish bogland remains intact. At current rates

of exploitation it has been estimated that all unprotected raised bogs will be extinct in the next few decades and only a tiny 4% (50,000ha) of the original area is being set aside for conservation. The scale and pace of this peat extraction means that the destruction of archaeological sites has been constant.

Awakening to this threat in the late 1980s, archaeologists began to carry out programmes of work in Bord na Móna bogs. Raftery's (1990, 1996, 1999) excavations between 1985–1991 at Corlea revealed an impressive—and still largely unique—Iron Age bog roadway made of massive oak timbers in Co. Longford. Archaeological excavations in Corlea, Derryoghil, Annaghbeg and other local townlands also revealed the presence of Neolithic trackways and particularly showed the intensity of Middle and Late Bronze Age trackway construction in the region. Peat deposits were also the subject of detailed palaeoenvironmental and insect studies (Caseldine *et al*. 1996; Reilly 1996), while a range of other studies investigated wood technology (O'Sullivan 1996a), dendrochronology (Baillie 1996) and literary references to trackways (Ó hÓgáin 1996). Established in 1991, the Irish Archaeological Wetland Unit (IAWU) embarked on a long-term archaeological survey of midlands bogs—effectively a rescue survey—revealing thousands of mostly brushwood trackways, hurdles and platforms in the raised bogs (IAWU 1993a, 1993b, 1995, 1997; Moore *et al*. 2003; McDermott 1998, 2007).

In 1996–8, the ambitious Lisheen Mine Project on Derryville Bog, Co. Tipperary (Gowen *et al.* 2005) carried out a major multidisciplinary study on one discrete Tipperary bog and showed just how much could be discovered about past human uses of the bog themselves. The archaeological excavations were combined with a major, multi-proxy environmental archaeological research programme (Caseldine *et al*. 2005; Reilly 2005; Stuijts 2005). Pollen analysis was undertaken with studies of beetles, wood and charcoal, testate amoebae, peat humification and plant macrofossil remains. This extraordinarily detailed palaeoenvironmental programme enabled a detailed reconstruction of human activity, woodland history, changes on the bog and specific natural bog events (e.g. bog bursts), that had an impact upon the trackways (Caseldine and Geary 2007).

Since 1999 Bord na Móna's archaeological consultants, Archaeological Development Services (ADS), have continued the work of the IAWU and have carried out up to 200 systematic archaeological excavations in the raised bogs (O'Carroll and Whitaker 1999; Turrell and Whitaker 2007: a range of unpublished archive reports by ADS are also available online at http://adsireland.ie last accessed 20 December 2007). All these archaeological projects have established beyond doubt that the raised bogs of Ireland are vast storehouses of archaeological material, of national and international significance, and at least 3,500 sites have been recorded. Unfortunately, the destruction of peatland archaeological sites—presumably with losses now also in the thousands—easily exceeds the rate of destruction of any other type of site in Irish archaeology. It should be noted that this is an unprecedented destruction of archaeological heritage, and as welcome as Bord na Móna's investment has been, the level of archaeological mitigation has been modest when it is contrasted with recent National Roads Authority (NRA) or Bord Gáis programmes of archaeological investigation, research and publication in advance of their industrial developments. In addition, the archaeology of Ireland's privately owned bogs remains largely unexplored.

Lakes and crannog research

Ireland's landscape also abounds in freshwater wetlands, particularly lakes and rivers. Indeed, much of Ireland's north midlands, the north-west and south of Ulster are basically landscapes of hundreds of lakes, amongst both drumlins and small basin bogs. Since the earliest origins of Irish archaeology, there has been a tradition of investigation of archaeology in these lakelands, particularly of crannogs and lake-dwellings (e.g. Wood-Martin 1886; Wakeman 1872). Both O'Sullivan (1998, 7–35; 2004) and Fredengren (2002) have reviewed the long history of crannog studies in their cultural and intellectual contexts, so this need only be briefly dealt with here. The earliest antiquarian investigations of sites such as Lagore, Co. Meath were largely aimed at recovering collections for museums and personal collections of antiquities (O'Sulllivan 1998, 8–10). Some early investigations, such as those by engineers of the crannogs around Strokestown, Co. Roscommon did prepare remarkable records of sites and their stratigraphy (O'Sulllivan 1998, 10–12), but by and large the structural, contextual and environmental evidence from most crannog investigations before the 1940s is poor.

The Harvard Archaeological Mission in the 1930s and 1940s had a significant impact on the quality of crannog research (O'Sullivan 1998, 20–2; O'Sullivan 2003a, with excavations of (mostly) early medieval crannogs at Ballinderry crannog No. 1, Co. Westmeath (Hencken 1936), Ballinderry crannog No. 2, Co. Offaly (Hencken 1942) and Lagore, Co. Meath (Hencken 1950). Apart from Joseph Raftery's excavations at Rathtinaun, Co. Sligo (Raftery 2003), subsequent programmes of excavation, mostly in Northern Ireland in the 1950s tended to be less ambitious, with small-scale excavations at Lough Faughan and Clea Lakes, Co. Down (O'Sullivan 1998, 22–3). Throughout the 1970s and 1980s, the emphasis shifted towards archaeological survey, both at a county level and at a regional scale, uniquely in the case of the Crannog Archaeological Project (CAP) between 1983–93, involving systematic underwater archaeological survey, particularly on Lough Ennell, Co. Westmeath (Farrell 1991). The largest archaeological excavation of a crannog in recent times has been that of Moynagh Lough crannog, Co. Meath (Bradley 1991). This remarkable site has evidence for lake-shore occupation in the Late Mesolithic, the Middle and Late Bronze Age and particularly the early medieval period—when it was the high-status dwelling of a social group engaged in bronze metalworking and other crafts and economic activities.

Other recent projects have combined both archaeological survey techniques, with small-scale excavation, radiocarbon dating and multidisciplinary environmental studies. Fredengren's (2002) Lough Gara Project investigated the archaeology of that lake's many crannogs and demonstrated that they varied significantly in form and size, that their chronological range was longer than had been expected with evidence for crannog construction and use in the Bronze Age, early Iron Age and early medieval period, with some later medieval activity also (Pl. I). Uniquely, Fredengren adopted an explicitly theoretical approach and attempted to show how people's perception of these islands shifted and changed across prehistory and the Middle Ages. Since 1997 the Discovery Programme's Lake Settlement project has been involved in research in the field, initially with a publication on past research (O'Sullivan 1998), followed by the Lake Settlement Project directed by Christina Fredengren that has focused on Lough Kinale, Co. Longford (Fredengren 2004). The project has also

Pl. I—A crannog exposed on the lake-shore at Lough Gara, Co. Roscommon/Co. Sligo. Drainage in the 1950s exposed the lake's crannogs and hundreds of artifacts were recovered by local people and archaeologists. (Photograph courtesy of the Department of Archaeology, NUI Galway.)

adopted a multi-proxy environmental archaeological research programme on cores taken from the vicinity of Ballywillin crannog, Co. Longford (Selby *et al*. 2005; O'Brien *et al*. 2005). These demonstrated the history of changing environments in the surrounding landscape as well as some events related to the construction and use of the crannog itself. More recently, it has also been demonstrated at Coolure Demesne crannog, Co. Westmeath that small-scale excavation, dendrochronological dating and environmental analyses can also be usefully carried out (O'Sullivan *et al*. 2007a). There are probably in excess of 2000 crannogs on this island—and these are sites of very high archaeological potential. In general Irish crannog studies seem to be currently going through a period of renewed interest and activity, in keeping with developments in Scotland. There is unfortunately no current wide-scale programme of excavation or underwater archaeological research on the subject.

Estuarine and alluvial wetland research and discovery

Ireland is an island nation, surrounded by an extensive coastline of at least 7,000km in length, along which there are numerous estuaries, sea inlets and bays. Archaeological surveys and excavations have shown that in early Ireland, coastal communities that settled along this shoreline made extensive use of the maritime resources of fish, wildfowl, seaweed and salt, and used the sea as a routeway (O'Sullivan and Breen 2007). However, until recent times Irish archaeology has shown little interest in

maritime archaeology and even less interest in the wetlands archaeology of its coastal and estuarine environments, its salt-marshes, mudflats and brackish water creeks.

Estuarine and alluvial archaeology remains poorly developed on this island, despite the lead offered by a range of projects in Britain (e.g. Bell and Neuman 1997, 1998; Bell *et al*. 2000). Between 1992–7, the North Munster Project of The Discovery Programme, carried out several seasons of intertidal archaeological survey on the Shannon estuary foreshore in south-west Ireland. These surveys have produced a range of prehistoric and medieval finds, wooden structures and environmental deposits (O'Sullivan 2001a). Neolithic submerged forests and estuarine silts produced respectively Neolithic red deer bone deposits and a Neolithic site with human bone, worked wood, lithics, a stone axe and charred hazelnuts. The grazing of cattle or sheep on salt-marshes is suggested by a Middle Bronze Age circular wooden hut in fen peats exposed on the foreshore at Carrigdirty rock, Co. Limerick and a Late Bronze Age post-and-wattle structure at Islandmagrath, Co. Clare on the Fergus estuary (O'Sullivan 1996b). Perhaps most remarkable of all were the medieval wooden fish-traps from the Fergus estuary, Co. Clare (dated to the fifth to seventh century AD), the Deel estuary, Co. Limerick (tenth to thirteenth century AD); and the Shannon estuary at Bunratty, Co. Clare—where a sequence of wooden fish-traps dated from the eleventh to thirteenth centuries AD suggested cultural continuity and practices despite ethical and social change after the Anglo-Norman colonisation. The Shannon estuary survey also uncovered a range of post-medieval fish-traps that testified to the large-scale exploitation of the estuary's fish-stocks up until the late nineteenth century AD (O'Sullivan 2001a, 2003a, 2003b). More recent archaeological intertidal surveys on the Fergus estuary have also led to the identification of a complex of Late Medieval (i.e. early fifteenth century AD) fish-traps at Boarland Rock, Co. Clare, potentially constructed and used by the island inhabitants of an Augustinian Abbey at Canon Island on the lower Fergus estuary (O'Sullivan and Breen 2007).

Similar intertidal surveys of Strangford Lough, Co. Down revealed entirely new types of archaeological sites on the foreshore, including submerged forests, early medieval and late medieval wooden and stone fish-traps, an early medieval watermill at Nendrum and post-medieval stone structures and kelp grids associated with seaweed harvesting (McErlean *et al*. 2002). It is striking that both projects (Shannon estuary survey and Strangford Lough Project) which investigated the intertidal zone uncovered a whole range of previously unknown sites, yet intertidal archaeological survey programmes have yet to be established at any significant level.

Alluvial archaeology—the investigation of deep sediments of riverine deposits not exposed on the intertidal zone—has barely begun, but there have been promising beginnings. Recently, NRA roadway developments in the vicinity of the Shannon estuary have uncovered evidence for the subtleties and dynamics of palaeoenvironmental change across time (Carter 2003) and the settlement and economic activities of Bronze Age and early medieval communities beside and within the marshlands (Taylor 2007). Similarly, NRA roadway development on the banks of the Suir estuary, Co. Kilkenny have required archaeological and environmental investigations that uncovered evidence for prehistoric and historic activities

in former (now reclaimed) estuarine salt-marshes and wetlands at Newrath, Co. Kilkenny (Wilkins 2007) and for the historic construction and use of a vertical wooden watermill in a former marshland environment at Killoteran, Co. Waterford (Murphy and Rathbone 2006).

Dwellings; Settlements; Landscapes

People of the wetlands? A social perspective on wetland dwellings and settlements

People have lived and worked in—or close to—Ireland's wetland environments since earliest times, either as a conscious choice or as an inevitable consequence of living on a damp, soggy island. Traditionally, archaeologists have interpreted wetlands as bountiful environments where people in the past lived so as to gather raw materials, hunt, trap, fish and generally exploit the diverse resources offered by these dynamic landscapes (see Van de Noort and O'Sullivan 2006, 9–31 for a review and critique of past approaches). In a sense, these are perspectives that have imagined the wetland landscape as a passive object or abstract backdrop, something out there to be exploited and ultimately a wild space that ends up being transformed and destroyed by human culture. Ironically, it is in essence both a romantic and a capitalist view of wet environments, seeing them both as wilderness spaces and as economic resources. Recent approaches have suggested the need to rethink our approaches to wetland dwellings and landscapes (e.g. Fredengren 2002; Van de Noort and O'Sullivan 2006). We need to start thinking about how people inhabited, understood and imagined wetlands as cultural resources, as storehouses of traditional knowledge and values; as spaces not only for human-environment relationships, but also as places for human social interactions and relationships between people, places, objects, animals and times, occasionally at the edge of society or in liminal spaces, but always at the centre of people's lives.

Social identity and wetland landscapes

Social identity is a topic of increased interest in archaeology. Indeed to extend the metaphor of both dwellings and landscapes as stages for human action, we might imagine wetlands less as a passive environmental backdrop, but more as a dynamic, changing or mutable stage for the enacting and negotiation of social identities of social status and role, gender, kinship and community. Wetlands were places where people lived and worked, engaging on a daily basis with these dynamic environments and thus creating distinctive social identities through their work (i.e. 'people are what they do'), actions and routine practices. Wetlands were also historical landscapes as much as anywhere else, in that they were spaces for memory, monument building and dwelling activities that changed in social and ideological meanings across time, from generation to generation (Bradley 2002). Re-thinking wetland dwellings and landscapes in these terms is a useful way of exploring past social identities, because it looks at identity not within the politics and intellectual games of postmodernism, but because it is located in people's life and work and emphasises the practical, lived experience and knowledge and engagement with the physical world, within specific historical and cultural contexts (Van de Noort and O'Sullivan 2006, 65–88).

Mesolithic wetland dwellings

Mesolithic hunter-gatherers seem to have inhabited wetlands—coastal, estuarine, alluvial and lacustrine—in a range of ways (evidence from peatlands is rarer perhaps reflecting the more limited extent of these wetlands early in their history of formation). The distribution of both excavated sites and stray finds certainly indicates a strong emphasis on coastal and riverine sites throughout the Irish Mesolithic era (Woodman 1978; Cooney and Grogan 1994). One of the earliest known Mesolithic settlements in the Irish midlands, at Lough Boora, Co. Offaly was located on the shores of a large postglacial lake. Excavated evidence suggested that hunter-gatherers were using fireplaces, working chert, shale and limestone and trapping pig, hare, birds, eels and trout (Ryan 1980, 1984; O'Sullivan 1998). At the Early Mesolithic dwelling place at Mount Sandel, Co. Derry (dated to *c*. 8000 BC), a community of hunter-gatherers lived for periods of time on the banks of the River Bann, building and occupying houses, while trapping salmon and eels in its water, hunting wild pig in the woods and travelling to the coast to procure flint and trap fish. The recovery of bones of various waterfowl also suggests that they occasionally travelled to local freshwater wetlands (Woodman 1985).

Late Mesolithic (i.e. 6500–4000 BC) dwelling places, despite the characterisation of the period as being about the transient activities of low-density, highly-mobile groups, seem to indicate an even more settled presence in wetlands. Late Mesolithic wooden fish-traps are now known from Ireland, so fishing would have been a structured activity, involving some investment of time, resources and raw materials (McQuade and O'Donnell 2007). Late Mesolithic sites in lakelands seem to have been in specific locations and involved some elements of occupation site building and episodic visits to places over long periods of time. At Clonava Island, Co. Westmeath (Mitchell 1972), at Derragh Island on Lough Kinale, Co. Longford (Fredengren 2004; O'Sullivan 1998, 48–52), Moynagh Lough, Co. Meath (Bradley 1991, 2001; O'Sullivan 1998, 52–3) and perhaps at Corralanna, Co. Westmeath (Stanley 2000), lake-shore occupation sites—some of which were constructed mounds or brushwood platforms—were located close to river-mouths and on the environmental boundaries. These sites were situated between more densely wooded islands and uplands and more open fens and marshes (although it is likely that Irish woodlands were probably occasionally open and more accessible to movement than previously thought). At Moynagh Lough, Co. Meath, Late Mesolithic hunter-gatherers constructed at least two small mounds of marl, peat and timber in waterlogged soils at the edge of open water, with birch, hazel, alder, willow and bramble growing on or close to it. The stratigraphical evidence for rebuilding suggested sustained activities at this one place over time, with repeated visits by social groups to the lake-shore, who deposited a rich assemblage of stone axes, chert, flint, a bone point and quartz tools, slate points and wooden objects. Analysis of animal bone indicated the hunting of wild pig, hare (with the bones smashed and cut), otter and a single aged bear (Bradley 1991; Bradley 2001, 299–305; McCormick 2004).

Views across the landscape were important on these sites. At Clonava, Co. Westmeath—a Late Mesolithic lake-shore occupation in fen peat was occupied and reinhabited over a period of time (A. Little and G. Warren, personal comm.) and may

have been sited to provide views down the lake towards a potential chert quarry on the summit of Knockeyon, a possible source of chert for Mesolithic hunter-gatherers in the north midlands (O'Sullivan *et al*. 2007b). At Derragh Island, Co. Longford, several mounds on the shores of the lake produced large assemblages of both Mesolithic and Neolithic objects, including Bann flakes, many stone axes, hammer-stones and other lithics. Fredengren's (2004) excavations have confirmed that at least one of these sites was a long-term occupation mound consisting of brushwood and stone and this was also the focus for working chert and processing of wood and meat, and that there is evidence for activity across the Late Mesolithic to early Neolithic transition. Other sites produce evidence for both Mesolithic and Neolithic activity. A recent discovery at Clowanstown, Co. Meath includes a Late Mesolithic landscape in a lacustrine wetland habitat. This was also a mound of clay, wood and stoney layers. Apart from a large assemblage of lithics, it has produced spectacular evidence for woven basketry fish-traps, probably amongst the oldest in Europe which were used to catch eels or small fish in a freshwater lake or pond. These baskets were weighted down with small stones, and associated with upright stakes and spreads of stone, as well as an array of other organic artefacts (Matt Mossop, personal comm.; Fitzgerald 2007).

While these Late Mesolithic lake-shore sites do testify to 'economic' exploitation of wetlands (with fishing at Clowanstown, plant gathering at Clonava, with hunting of wild pig, hare and otter at other sites), these were clearly activities that were embedded in various social practices. These would have been recognisable places of past human activities associated in lore and memory with certain seasonal hunting and fishing practices. For example, at Moynagh Lough, lake marl was spread across the mounds and when it was hardened by the sun, would have glistened as white shapes in the reeds (see Little 2005 for a review of aspects of the materiality of these sites). Their location in the landscape would also have been important, on islands, close to rivers, with views across the landscape towards points of distant interest. These sites may provide evidence for the seasonal movement of people along riverine 'pathways' towards places of pause (i.e. pre-existing and well-known wetland camp sites on episodically renewed mounds on islands and fen margins), where they probably gathered to meet other social groups, exchange raw materials (such as chert and flint) and catch up on the year's news and stories. Interestingly then, there are also hints that these were places for careful deposition of certain types of stone tools—such as caches of groundstone axes and chert and chert blades—that were themselves objects of movement through the wetlands (Bradley 2001, 302; O'Sullivan 1998, 51; O'Sullivan *et al*. 2007b; Little forthcoming).

Neolithic wetland dwellings and mounds

Neolithic farming communities, after some social and ideological changes at approximately 4000 BC, appear to have settled the landscape in different ways; building and using rectangular houses, using pottery and stone tools; herding livestock and growing crops in field systems, and burying their dead in megalithic tombs (Cooney 2000). Neolithic communities seem to have turned their backs to some extent on the wetlands—although there are patterns of short-term, seasonal and specialised activities on

lake-shores and along coastal districts. For example, some Neolithic communities living on the coast—such as at Culleenamore, Co. Sligo (Burenhult 1984)—continued to make some use of shellfish and seaweed, as well as the flint nodules that could be gathered on rocky and sandy foreshores, although this was firmly in the context of a farming lifestyle (Cooney 2000, 74–7; O'Sullivan and Breen 2007, 66). On the other hand, other Neolithic dwellings in coastal landscapes have produced little evidence for the exploitation of maritime resources. At a Neolithic house at Ballygalley, Co. Antrim, situated only a few hundred metres from the sea, there was evidence of wheat and cattle, but no evidence of the exploitation of marine foods. Even beads found were made of stone, rather than seashells (Simpson 1996). Stable isotopic analysis of Neolithic human remains also indicates a dramatic shift from a 'marine' to a 'terrestrial' diet, shifting from the consumption of fish to a diet perhaps dominated by meat, bread and dairy products (Schulting 2004). On the other hand, the occurrence of seashells in tombs and the striking maritime location and siting of many megalithic tombs often suggests that the sea was perceived and understood in new ways—perhaps in symbolic or ideological terms as a space resonant of stories of ancestral settlers who came across the ocean with new animals (i.e. cattle) and crops (i.e. wheat) (McCormick 1985–6; Schulting 2004; O'Sullivan and Breen 2007, 68–70).

There is certainly evidence that some Neolithic farmers retained reasonable access to specific wild foods, such as the hazelnuts and apples recovered from Neolithic Tankardstown. At the same time, some Neolithic communities may have continued to live a broad-spectrum 'forager-farmer' lifestyle, as has been suggested for an unusual wetland 'occupation site' at Carrigdirty Rock, Shannon estuary, where a stone axe, worked wood and fragments of basketry were recovered with human bone—an intriguing association (O'Sullivan 2001a, 89–90). It may be useful then to think of the few Neolithic wetland sites in different terms—with social and ideological meanings implicated in wetland activities also. There are a few Neolithic occupation sites seemingly occupying wetlands, including a possible Neolithic 'crannog' or mound of peat, brushwood and a stony layer at Rathjordan, Co. Limerick, which produced large numbers of stone axes, Late Neolithic pottery, flint objects and hearths in the surrounding peat (Ó Ríordáin and Lucas 1946–7; O'Sullivan 1998, 64–6). More recently, excavations of a Neolithic mound at Clowanstown, Co. Meath (sitting on top of a previous Late Mesolithic site) have revealed that it was built up of layers of burnt stone, ash, peat and clay, with finds of discretely deposited Neolithic carinated pottery, stone axes and flint (Matt Mossop, personal comm.). The Neolithic activities at both Rathjordan, Co. Limerick, and Clowanstown, Co. Meath, appear to have been more than wetland settlements—these were also places of deposition in the vicinity of a mound of broken and burnt stone.

Bronze Age wetland dwellings and landscapes

In the Middle Bronze Age, from about 1600 BC onwards in particular, there is evidence of a real intensification of people's social, economic and ideological engagements with bogs, rivers and lakes (see Plunkett and McDermott 2007 for an analysis of radiocarbon dates from Irish wetlands). These activities included the increased Bronze Age settlement and inhabitation of wetland environments; an explosion in the

use of *fulachtaí fia* (popularly known as *fulachta fiadh*) on wetland margins; an increase in trackway construction on bogs and estuarine salt-marshes; and the widespread adoption of distinctive ritualised practices involving the deposition of weaponry, ornaments and other objects into watery places. There is also a sense of a distinction between different types of wetland environments. Bronze Age settlements are rare from bog surfaces—the best-known examples being the Late Bronze Age enclosed site at Clonfinlough, Co. Offaly, situated between a bog and a lake (IAWU 1993b).

In contrast, Middle Bronze Age settlements on lake-shores and islands are common (O'Sullivan 1997, 1998); such as the Middle Bronze Age enclosed lake-shore house at Cullyhanna Lough, Co. Armagh (Hodges 1958); the Middle Bronze Age occupation site at Ballyarnet Lake, Co. Derry (Ó Néill and Plunkett 2007), and a Middle Bronze Age phase of activity at Moynagh Lough crannog, Co. Meath (Bradley 1991) and also at Knocknalappa, Co. Clare (Grogan *et al.* 1999). These lake-shore and occasionally crannog settlements could reasonably be interpreted as 'domestic residences', while some were probably relatively high-status residences (with finds including metalwork, pottery, stone tools, bone objects and amber) located at the margins of watery landscapes. It has been suggested that Middle Bronze Age *fulachta fiadh* (occasionally found in association with barrows and standing stones) used for cooking, making beer, processing leather, or bathing (or for all these things) may also have been located at the boundaries between dry-land settlement units, enabling populations to gather at these places between worlds. Some Middle Bronze Age occupation sites, such as the small roundhouse at Carrigdirty Rock, Co. Limerick, may have been used by communities grazing cattle or sheep on marshes (O'Sullivan 1996b, 2001a). Finally, there is also evidence for Middle Bronze Age human burials in barrow cemeteries along river valleys that possibly also functioned as territorial markers along such natural riverine boundaries (Cooney and Grogan 1994). It is unlikely that this Middle Bronze Age intensification of activities in wetlands is simply due to the currently accepted explanations; deteriorating climate, societal collapse or population pressure. In fact, recent archaeological discoveries in drylands contexts suggest a widespread intensification of the use of the entire landscape, from hilltop, across plains and into wetlands. Also, there is no other evidence that people occupying wet places were poor or socially marginalised groups that had been pushed to the edge of the 'normal' settlement landscape (Ó Néill and Plunkett 2007). It is clear that Bronze Age lake dwellings are in fact richer in terms of the range and quality of finds that they produce (O'Sullivan 1997).

Late Bronze Age lake-shore sites are also well known and it has now been established that crannogs—palisaded islands in open water—were also being constructed, used and modified in the period (e.g. O'Sullivan 1998; Fredengren 2001; O'Sullivan *et al.* 2007a). Late Bronze Age crannogs and islands have produced evidence for livestock (animal bones) and food production (saddle querns). There is also evidence for the use of high-status goods, such as socketed axes, bronze rings, swords and spearheads, amber and lignite and sites like Ballinderry crannog No. 2, Moynagh Lough and Rathtinaun are amongst the 'richest' settlement sites from the period. Some Late Bronze Age crannogs, such as Lough Eskragh site B, Co. Tyrone, Rathtinaun and Killymoon have produced evidence for industrial or metalworking activities, such as layers of burnt stone, clay mould fragments, saddle querns in large numbers and

evidence for large hearths and fires. Fredengren (2002) has suggested that by the Late Bronze Age, crannogs and lake dwellings could have been places set aside for metalworking and perhaps also places from which metalwork, human skulls and other objects were deposited in wetlands. At Late Bronze Age lake sites such as Moynagh Lough, Co. Meath (Bradley 1991), Ballinderry crannog No. 2, Co. Offaly (Newman 1997), and at Rathtinaun crannog, Co. Sligo (Raftery 1994), residential or settlement activities are seemingly associated with stray finds of swords, spearheads, amber and even hoards of objects (such as Rathtinaun crannog, where a hoard of tweezers, a pin, rings of bronze and tin, boar tusks and penannular gold and lead rings were buried in a wooden box, its position marked by wooden stakes). It is unclear as yet how structured these deposits are, as there have been few studies that explore the patterns, contexts, associations and range of objects and hoards found on Late Bronze Age sites actually on or at settlements—and the association between sites like Ballinderry No. 2 and reputed discoveries of hoards is unclear. However, all these sites vary in scale, organisation and material culture and it would be unwise to regard them all as similar.

At Clonfinlough, Co. Offaly, a Late Bronze Age wetland settlement built and occupied during a drier period on a bog produced roundhouses with hearths and occupation layers on timber platforms (Pl. II). Finds included an amber bead, six coarseware pottery, saddle querns and cattle, small amounts of pig and sheep bone. Dendrochronological evidence showed that House 1 was built between 917–899 BC, with a timber trackway near it built at 908±9 BC. House 2 upper level produced a dendrochronology date of 886 BC. Clearly the houses and trackways were built, repaired and altered over about 30 years, after which the site was abandoned. Archaeological and environmental evidence suggests that this was a settlement of people involved in pastoral farming, with some access to exotic goods (amber beads), rather than a high-status settlement (IAWU 1993b; O'Sullivan 1998, 83–5; McDermott 2001, 22).

PL. II—Reconstruction image of a Late Bronze Age wetland settlement excavated in a bog at Clonfinlough, Co. Offaly, (Illustration by Conor McDermott; IAWU 1993b; School of Archaeology, UCD).

Early medieval crannogs: stages for social identity

In the early medieval period, the classic wetland habitation was the crannog; the small island of stone, earth and wood situated in the watery shallows of lakes. While crannogs were being constructed and used in the Late Bronze Age and Iron Age (see Fredengren 2002 for a review of radiocarbon dating evidence for early Iron Age crannogs on Lough Gara), there is a widespread gap or hiatus of *c*. 500 years in the record until the late sixth century AD. Recent archaeological investigations of a crannog at Coolure Demesne, Lough Derravaragh produced dendrochronological evidence for building of an oak palisade at *c*. AD 402, in the Iron Age/early Christian transition phase—a strikingly early date. However, most crannogs were constructed and used between the sixth and tenth centuries AD.

Early medieval crannogs are amongst the most remarkable and evocative features of Irish archaeology and are perhaps the best-known aspects of Ireland's wetland archaeological heritage (e.g. O'Sullivan 1998, 2000, 2001b, 2001c; Fredengren 2002). Since the nineteenth century in Ireland, they have been the subject of antiquarian investigation (e.g. Wood-Martin 1886), while the archaeological excavation of crannogs such as Ballinderry crannogs No. 1 and 2 (Hencken 1936, 1942) and Lagore crannog (Hencken 1950) were formative events in the development of Irish archaeology (O'Sullivan 2003c). Recent archaeological surveys have also indicated a surprising diversity of age, size, morphology, siting and location. Early medieval crannog archaeological excavations have produced abundant evidence for houses, working areas, palisades, middens, evidence for objects of wood, bone, copper-alloy working, iron-working and palaeoenvironmental and economic evidence for animal bone, burnt grain and other foods (O'Sullivan 2004). More recently, multidisciplinary investigations of sites such as Moynagh Lough (Bradley 1991), Sroove, Co. Sligo (Fredengren 2001, 2002), Bofeenaun, Co. Mayo (Keane 1995), and Coolure Demesne (O'Sullivan *et al.* 2007a) have revealed good evidence for their houses, pathways, palisades, middens, artefact assemblages and the debris of domestic activity and craft production.

Ireland's early medieval crannogs have traditionally been interpreted as defensive refuges occupied at times of danger, or as high-status lake dwellings used for social display and prestige (e.g. Warner 1994; O'Sullivan 1998, 2000). The Irish early medieval annals and saints' lives certainly associate crannogs with the powerful and violent struggles between kings and depict them as places that could be built, fortified and inhabited, destroyed by fire, looted and sacked by raiders on boats and overwhelmed by winter storms and floods. There are certainly some crannogs that served at times as significant dwellings for aristocracy and the upper class, perhaps occasionally located on the political frontiers represented by lakes largely for social ideological and political reasons (e.g. O'Sullivan *et al*. 2007a). However, it has also been established through the excavation of smaller crannogs such as Bofeenaun, Co. Mayo (Keane 1995), that many were seasonal or temporary occupation sites used for specialist crafts, particularly iron-working. Many sites may have been like Sroove, Co. Sligo, a potential lake-dwelling of the poor, landless or unfree (Fredengren 2002).

Other forms of early medieval wetland settlement are known; including an interesting early medieval 'bog crannog' with a house enclosed by a palisade at Ballintemple, Ballykean Bog, Co. Offaly (Turrell and Whittaker 2007). This site was

originally discovered and dated by IAWU to AD 538–659 (Stanley and Moore 2004). Recent excavations by ADS have revealed it is a complex site, formerly situated on poorly humified peat suggesting it was on a soggy bog surface, with radiocarbon dates from the floor timbers and palisade of AD 440–620 and AD 580–780. The house was 9m in diameter (with a possible back-house) with a timber foundation under a clay floor and hearth. It was enclosed within a 20m circular palisade that slumped into the bog and was rebuilt or repaired on occasions (Turrell and Whitaker 2007, 4). Although the early medieval house and enclosure fits well with our knowledge of contemporary settlements (O'Sullivan 2006), it is unusual in archaeological terms in regarding its siting. Interestingly, it does fit well with contemporary historical sources that refer to built '*insola in gronna*' (islands in bogs) and to a range of references in the early medieval midlands' saint's lives to marshland dwellings (O'Sullivan 2004). This site may have been an early medieval settlement situated on a political boundary, a seasonal occupation site or a place designed to exploit the bog's resources of livestock grazing or other raw materials. It is a classic wetland site with excellent archaeological and palaeoenvironmental potential.

However, in general it is clear that early medieval crannogs were not in wetlands to exploit their economic resources of wildlife and raw materials. Environmental archaeological studies have demonstrated that their inhabitants primarily herded dairy cattle, cultivated cereal crops and only rarely gathered wild foods or hunted (see O'Sullivan 1998, 2000, 2004; Fredengren *et al.* 2004). Indeed, on the high-status sites, it is likely that the hunting of deer was a largely recreational activity for young nobility rather than a food procurement strategy (see Newman 2002 for evidence of deer-hunting in the sixth-century pre-crannog occupation phase at Ballinderry No. 2, Co. Offaly). Instead then, we should be exploring how early medieval crannogs—as islands on water—were used to construct and negotiate social identities within the wider landscape.

In the early medieval imagination, islands and lakes were often seen as places apart. In this period's hagiographies, saints frequently confront and defeat powerful individuals, usually kings, on their crannogs or defeat monsters on lake islands. Contemporary literature, particularly the ninth–tenth century voyage tales and adventure tales, also commonly depict islands as fantastic, other-worldly places, so that heroes often go out onto magical lake islands, eat sumptuous feasts within fantastic houses on them, fight battles and negotiate in various ways with other-worldly women. By inhabiting distant islands, by travelling to them by boat, or by negotiating with others upon them, the community's leaders, whether they were kings, saints or other male figures, were often depicted as having an ability to confront other-worldly forces to the benefit of the community. Of course, such early medieval texts were ideologically loaded, with the agenda of ordering society around the normative beliefs of the powerful, the elite, and the patriarchal authorities of the Church (see Moreland 2001). Nevertheless, it seems likely that the landscapes and island architecture of early medieval crannogs were actively used to control and negotiate people's identities of social status, kinship and gender and their social relationships to each other (Pl. III).

It is a motif that occurs in several early medieval texts. In the eighth-century *Life of Áed mac Bricc*, the saint goes and waits impatiently at the harbour of

Pl. III—Reconstruction 'photograph' of an early medieval crannog at Coolure Demesne, Lough Derravaragh, Co. Westmeath, illustrating how such islands served as metaphors for social distance and remoteness in early Irish society. (Photoshop image by Conor McDermott, based on photographs by Aidan O'Sullivan, School of Archaeology, UCD.)

the island of the king of Uí Néill on Lough Lene, Co. Westmeath, never to receive his invitation onto the island (Bhreathnach 2005). Similarly, in the twelfth-century *Life of Colmáin maic Luacháin*, the saint goes to *Port na Inse* ('the harbour of the island'), and looks out at the king of Fir Tulach who was resident on his island of Inis na Cairrge, on Lough Ennell, Co. Westmeath (Meyer 1911). This motif of the saint or other personage standing on a lake shoreline awaiting impatiently the attention of the king out on his island is one that occurs in several of the saints lives and also in the narrative literature. Early medieval kings who glibly ignored their shoreline visitors soon found themselves in trouble, as the saints caused the islands to miraculously sink beneath the water (Van de Noort and O'Sullivan 2004).

Using a phenomenological perspective we can explore how this might have worked. One of the most impressive of Irish early medieval royal crannogs, Cro-Inis, is situated about 80m out into the waters of Lough Ennell, Co. Westmeath. This was the royal site of the Clann Cholmáin kings of the southern Uí Néill between the eighth and the eleventh century AD (Fig. 4). It is overlooked by another significant early medieval royal residence, the large raised ring-fort of Dún na Sciath (the 'fort of the shields', also known as a royal site). Both places in this royal settlement landscape are physically and perhaps socially separated from the nearest 'ordinary'

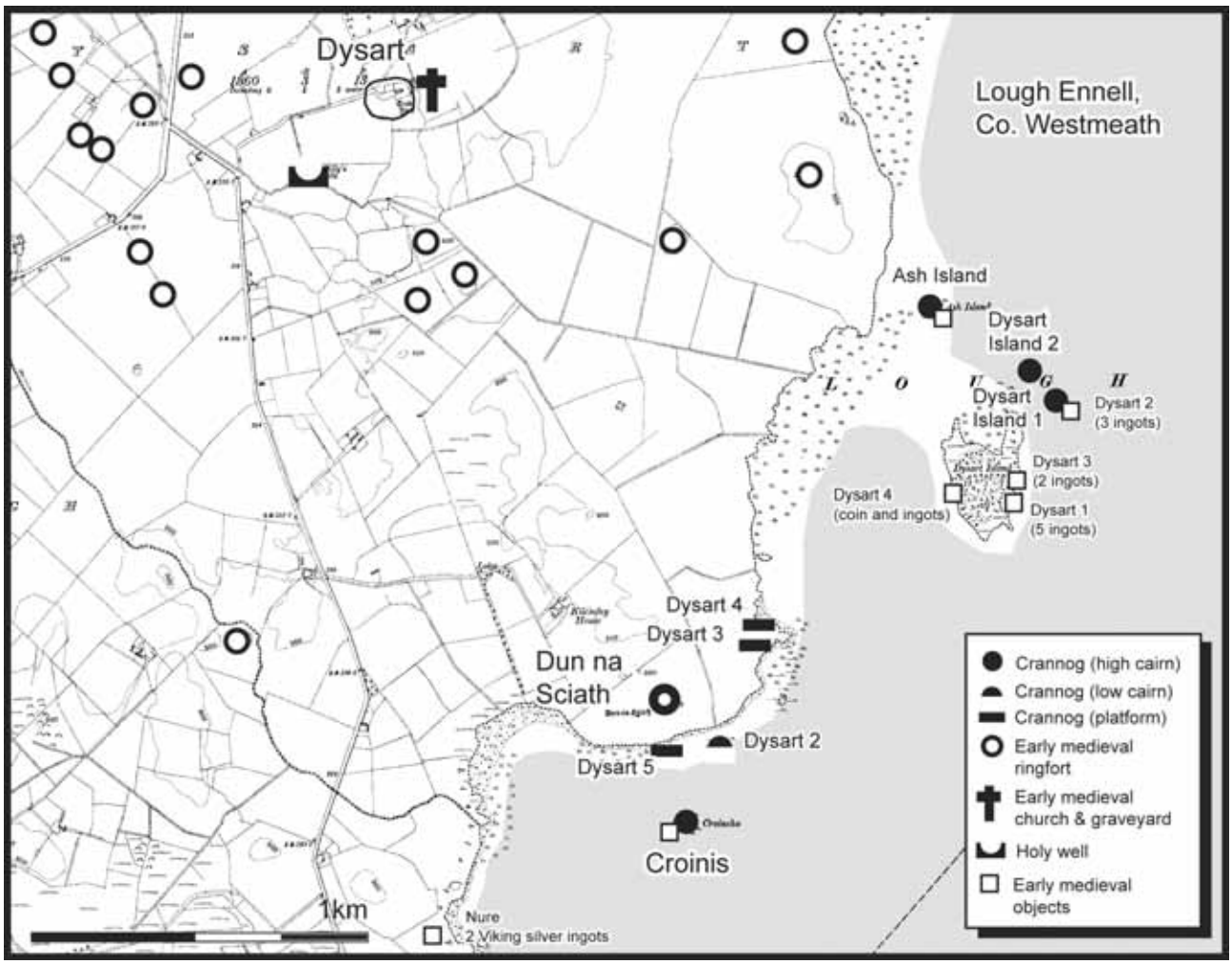

FIG. 4—The early medieval royal landscape of the Clann Cholmáin on the shores of Lough Ennell, Co. Westmeath, showing the location of the crannog of Cró-Inis in relation to ringforts and churches around the lake (after O'Sullivan 2004).

early medieval settlements (i.e. ring-forts and churches) by 1.5km of 'empty space'. The crannog and ring-fort, situated at the end of a long natural dry-land peninsula flanked by fens and lake wetlands, seem to be within a landscape of royal performance—possibly a royal *faitchi* or green. Only upon approaching the ring-fort, does the crannog itself become visible—shimmering in the sun, distant, remote, and enigmatic (O'Sullivan 2004; Van de Noort and O'Sullivan 2006, 71–2). Early medieval social groups could have used the enigmatically distant prominence of crannogs in discourses of power and social identity.

However, it should also be pointed out that early medieval crannogs were occupied by lower social classes. Most early medieval crannogs would actually have been small islands, situated in shallow water, close to their shorelines and accessed by stone or timber pathways or causeways. However, it is still the case that social

groups were inhabiting wetlands, using water to construct a social distance and to bound the dwelling place. Recent surveys and excavations on Lough Gara, Co. Sligo, reveal that many of the small crannogs there were occupied in the early medieval period, probably by ordinary farming groups, or occasionally by the landless, unfree or the poor (Fredengren *et al*. 2004). Fredengren (2002) argues that Lough Gara's crannogs were situated in places that were peripheral to the main settlement landscape of early medieval ring-forts, churches, ogham stones and other 'tribal nodes'. The early medieval crannog at Sroove, dated to between the seventh to the tenth century AD, was used in diverse ways across time. It was initially a small island dwelling, with a wooden house enclosed within a wooden palisade. Its inhabitants left few material possessions, although they certainly had access to cattle, pig and sheep meat, as well as cereal grain. There was almost no attempt to 'exploit' the lake's wetland resources of fish, waterfowl or plant foods. The early medieval island was then used towards as an open-air, iron-working platform (seemingly not functioning as a settlement). Fredengren (2002) suggests that this shows how crannogs changed in meaning across time, using the idea of 'interpretative drift' to explore how people would have used this small site firstly as a domestic structure, then as an open-air platform of shattered stone used for forging iron, before it was abandoned.

Is it not paradoxical that islands could be places for kings at the same time as they could accommodate seemingly socially marginal(ised) groups, such as the poor, blacksmiths (some crannogs seem to have been mostly iron-working platforms), women, the young—and even monsters? However, liminality is a fluid and mutable concept and people could be both seeking and avoiding it, according to their social status, gender and role in the community. In the early Middle Ages, the king placed his royal residence on an island to achieve a social distance and a reputation for power, but at the same time he was at the physical and symbolic centre of the early medieval social landscape. The lord built his residence on a crannog to emulate the powerful, and to protect his own wealth and that of the community. The poor and socially marginalised may effectively have been doing the same thing, inhabiting places at the edge of land, maintaining their own identity and sense of place, while perhaps also being marginalised by others. Early medieval crannogs on lakes were dwelling places at the edge, at the same time as they were places at the centre of people's lives.

Late medieval use of crannogs

In the late medieval period, there is abundant archaeological, historical and environmental evidence for the rebuilding, use and occupation of Irish crannogs, particularly in the north midlands and north-west (O'Sullivan 1998, 150–6; 2001b, 2001c). Late medieval crannogs probably served as wide, if not a wider range of functions as they had previously done in Gaelic Irish society between the thirteenth and seventeenth centuries AD; as lordly residences and refuges at times of conflict or danger, as dwelling places for the poor or socially marginalised (i.e. outlaws), as prisons, hospitals, munition stores and safe places to store wealth. To some extent, the reoccupation of previous early medieval sites may relate to ideas of dynastic ancestry, memory and cultural practices, and conservative archaic connections with a distant past. In this

sense, some crannogs may have been monuments to a past that could be utilised in the present by Gaelic lords (for a review of early medieval crannogs with later medieval occupation evidence, see O'Sullivan 2001c). However, archaeological investigations and dendrochronological dating programmes have now also revealed that that some crannogs, particularly in the north-west, may have actually been properly built in the Late Medieval period, or at least that activity upon them at that time was substantial and involved the use of wooden and stone habitation structures. There is also abundant finds evidence in the form of Late Medieval pottery, dress ornaments and tools, and weapons for the inhabitation of crannogs (O'Sullivan 2001a; Fredengren 2002, 265–76, 282, 287; Brady and O'Conor 2005). Brady and O'Conor (2005, 127) suggest that the general lack of recognition of this aspect of crannog histories springs from a sense amongst Irish historians and archaeologists that the late medieval Gaelic Irish use of crannogs denotes the architecturally poor and culturally backward practices of the natives in comparison to their stone-castle building neighbours. It is likely that further crannog research will enable a better understanding of the social and ideological role of crannogs in Late Medieval Gaelic society, but it is interesting to note that at the end of the Nine Years War in 1602, English commentators did observe crannogs and regard them with repugnance, almost as if these were powerful cultural symbols of a different civilisation (O'Sullivan 2001b).

Communications; Movement; Labour

Moving around the landscape

People in the past moved around the landscape, at both at a local and regional scale, for various social, ideological and economic reasons. Movement and travel would have been a routine aspect of daily life and practice, as people worked the land, managed plants and animals, carried goods elsewhere and travelled to maintain and re-establish social relationships with kin, neighbours and outside communities (Bell 2003). In prehistory and the early medieval period, before the construction of major roads, rivers and lakes would often have provided a means of travel and transport through a wooded landscape—although the extent to which deciduous woodlands are a barrier to travel has probably been exaggerated. Rivers were important nodes of movement and communication, and rarely a significant barrier to travel—either through the use of boats, causeways or fording places (e.g. Condit and O'Sullivan 1999). In contrast, other wetlands such as raised bogs, fens and carr woodlands provided a more difficult, but not impenetrable boundary—but still requiring the construction of pathways and tracks to negotiate their watery hummocks and pools. Movement *into* wetlands would have also involved the use of boats, platforms and pathways.

The discovery and investigation of wooden trackways

Archaeological survey has led to the recognition of thousands of wooden (and occasionally sand and gravel) trackways in the midlands' raised bogs, mostly in Longford, Offaly, Tipperary, east Galway, Westmeath and Kildare (Breen 1988; Raftery 1990, 1996, 1999; McDermott 2001, McDermott *et al.* 2002; Stanley 2003; Murray *et al*. 2002;

O'Carroll and Whitaker 1999; O'Carroll 2001; Gowen *et al.* 2005; McDermott 2007). Indeed, in parts of the Irish midlands, trackways are our best evidence for prehistoric settlement (in the absence of classic upstanding prehistoric monuments). McDermott's (1998, 2007) accounts of prehistoric wooden trackways in the raised bogs of Offaly reveal how people inhabited this 'quiet' archaeological landscape throughout prehistory, with particularly good evidence from the Bronze Age and Iron Age. Most wooden trackways were small hurdle or brushwood structures built to cross short stretches of treacherous ground, either at the edge of the bog, or out on its damp surface, while a few large timber or roundwood structures were major investments in time and labour. In social and cultural terms, wooden trackways provide us with evidence for past people's desire to maintain access to the bog and its resources, while others were established to maintain routeways across the bog and through the wider landscape, to enable access to bog islands and to ensure ongoing connections with neighbouring communities.

Wooden trackways have provided us with a range of other insights into past lives and landscapes; into the choices and decisions that people in deciding to lay a routeway into the bogs and fens. Archaeological study has enabled us to assess the physical effort and labour needed to construct these roads as people gathered the raw materials from the neighbouring woodlands, worked the wood, chopping with axes, hewing and cleaving planks and cutting simple joints. Wood species and tree-ring studies have demonstrated the character of local woodlands and show how people were aware of the properties of each tree species, how the wood could be best worked, and perhaps how some trees (e.g. oak, yew trees) had symbolic or spiritual properties which were occasionally incorporated into the structure (O'Sullivan 1996a; Ó Néill 2005). Wood studies have also demonstrated how people may have exploited scrubby woodland, or managed hazel woods for wattles (Stuijts 2005). Multi-proxy palaeoenvironmental studies of peats, peat hydrology, beetles, plant remains and other evidence also have demonstrated the biographies of these structures in their environments; the years or seasons they were made; how long they could have been used for (and many were surprisingly short-lived), and how they may have sunk slowly into the bog or were affected by changing climate, bog conditions or other environmental factors (Caseldine 2005; Caseldine *et al*. 2001; Caseldine *et al.* 1996; Caseldine and Geary 2007).

Chronology, environment and culture

In terms of chronology, radiocarbon dating and dendrochronological dating programmes indicate that trackways typically date to the early to middle Neolithic, the Middle and Late Bronze Age (in particular), the early Iron Age (*c*. 500–300 BC) and throughout the early medieval and late medieval periods (McDermott 2007; Plunkett and McDermott 2007, 286). There is also a sense that there are regional and local differences in chronology that do not always fit with these overall patterns. Nonetheless, the periods of increased trackway construction as indicated by dendrochronology also appear to correspond to some extent to specific phases of climate change and particular events, in the Middle Bronze Age (*c*. 1628 BC) and Late Bronze Age (*c*. 1159 BC) and at the beginning of the early medieval period (*c*. AD 540); see Bailllie and Brown 1996; McDermott 2001, Fig. 10. However, while climate change; a

period of warmth and dryness on bogs—when trackway construction would have been easier; periods of increased cold and rainfall, deteriorating environments and societal collapse have all been invoked as causal factors in such building, the increase in such construction in the Middle Bronze Age and Late Bronze Age probably relates as much to the increased use of wetlands generally, and the growth and expansion of settlement landscapes across this period (as is being seen by more recent archaeological programmes in advance of roadway development). Undoubtedly, social, cultural or technological factors are involved—as people showed an increased interest in the resources of the bog itself, or as regional or local politics either hindered or encouraged movement across the landscape. At Derryville, Co. Tipperary, trackway construction might have related to the perceived value of the bog itself and the nature of activity on it across time, with a shift from marginal resource exploitation in the Early to Middle Bronze Age, through to a more complete integration of the bog into the broader landscape by the early medieval period (Cross *et al.* 2001; Plunkett and McDermott 2007, 287).

Continuity of practice

Occasionally, the trackways demonstrate a significant continuity of practice across time, as people renewed and constructed trackways across the surface of the bog over hundreds or even thousands of years. In some cases, such as the Early Neolithic roundwood trackway at Corlea 9 (*c.* 3700 BC) and the remarkably large Early Bronze Age plank trackway at Corlea 6 (2259 BC) higher up in the bog, the trackways seem to essentially succeed each other—despite the gap of centuries between them—by taking the same line across the bogland thus suggesting some long-term continuity in routeways and communications (Raftery 1990, 1996). At places like Derryoghil, Co. Longford, up to 30 Middle and Late Bronze Age hurdle, brushwood and timber trackways (Fig. 5), although buried at different depths in the bog were found densely concentrated in the same local area, indicating a local persistence over at least a few generations in keeping access open into, or across, this narrow stretch of bogland (Raftery 1996). At Derrynagun, near Lemonaghan, Co. Offaly, one trackway was maintained over several centuries in the early medieval period (McDermott 2001, 23), while an early medieval 'pilgrims road' at Bloomhill, Co. Offaly, was also reconstructed across several centuries (Breen 1988). However, as much as there is continuity, there is also change and frequent gaps in activity, especially when it is considered that many hurdle or brushwood trackways would have deteriorated quickly in wet conditions. At Derryville, Co. Tipperary, trackway construction and bog use was episodic rather than continuous (Cross *et al.* 2001). Moreover, there is a definite gap in activity in the first five centuries AD, or the late Iron Age (Plunkett and McDermott 2007, 290).

Shifting scales: the social and ideological role of trackways

The purpose or function of these trackways obviously varied. Some of the early Neolithic trackways, particularly Cloonbony and Corlea 9, Co. Longford, are relatively substantial structures (Raftery 1996, 180–94; 81–91). The Early Bronze Age trackway

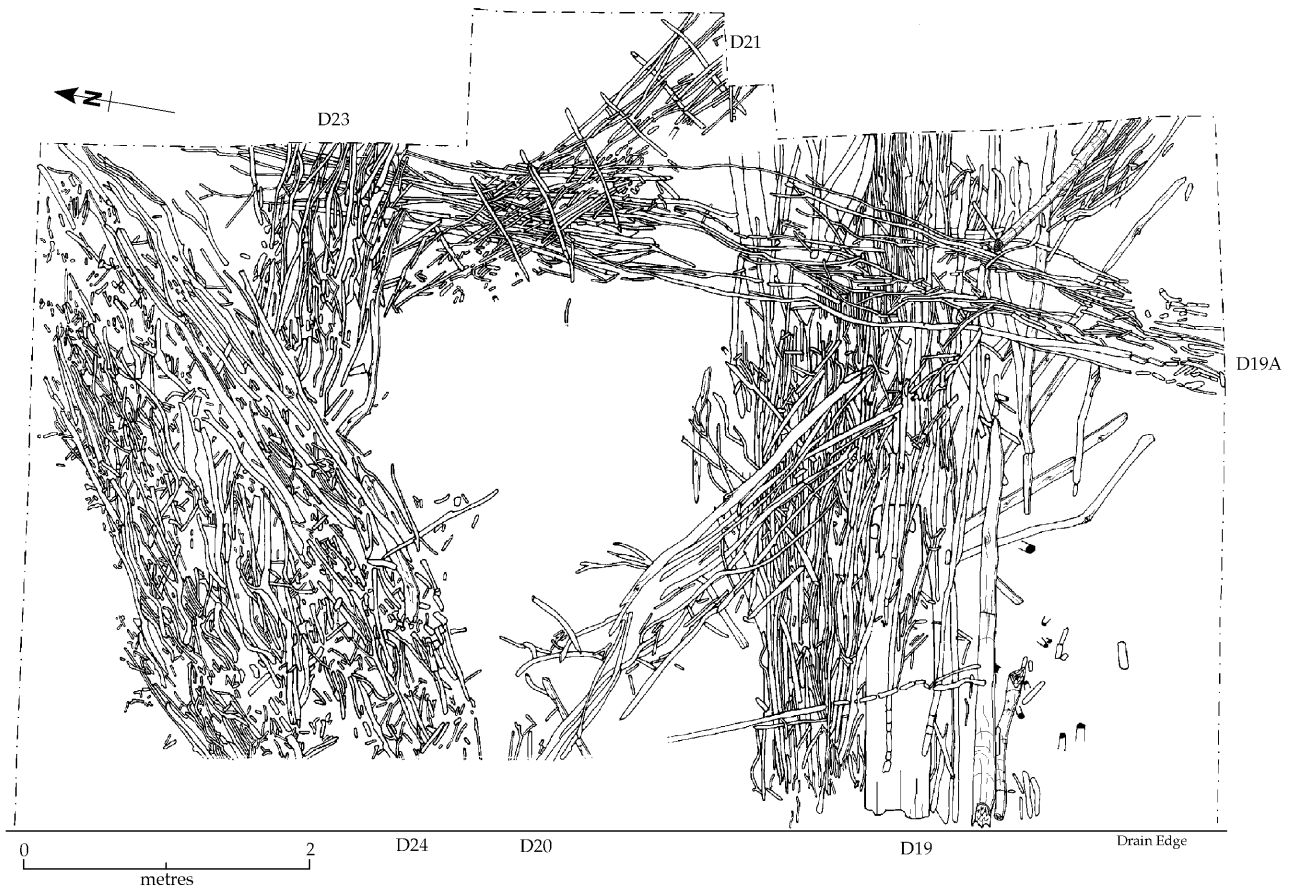

FIG. 5—Middle and Late Bronze Age brushwood and hurdle trackways at Derryoghil, Co. Longford. Calibrated radiocarbon dates for D19 (1633–1454 BC); D20 (1208–930 BC); D21 (1298–1026 BC); D23 (1194–934 BC) and D24 (1017–839 BC) indicate repeated trackway construction across several centuries—and multiple generations—in the one place leading out from this small bog island into the wetlands (after Raftery 1996).

at Corlea 6, dated to 2259± BC, is a massive structure, with oak, ash and alder cleft trunks laid across a foundation (Raftery 1996, 71–7). Tool-mark analysis indicated that metal axes had been used throughout, showing that earliest copper or bronze axes were being used in practical ways (O'Sullivan 1996a). Several Middle and Late Bronze Age trackways are also quite massive constructions, including trackways at Derryoghil 1, Co. Longford (Raftery 1996), Derrindiff, Co. Longford (dated to 1612 BC; IAWU 1993a, 36–41), and Annaghacorrib 1, Co. Galway (dated to 892±9 BC; IAWU 1995, 39–53). At Derryoghil 1 (dated to 938±9 BC), large cleft and mortised oak planks were placed on foundations of roundwood and brushwood (Raftery 1996, 107–15). The Iron Age Corlea 1/Derraghan 1 wooden trackway (Pl. IV) dated to 148 BC—described by Raftery (1999) in one of his typical puns as a 'Colossus of roads'—is unique in Ireland in terms of its scale and use of resources, extending for kilometres across the bogs (Raftery 1996, 7–64). Early medieval and late medieval trackways in Leamonaghan, although not to the same scale are also relatively substantial leading

Pl. IV—The Iron Age trackway at Corlea 1, Co. Longford, under excavation in 1986. This massive oak plank trackway, dated to 148 BC, remains unique in Irish archaeological discovery. (Photograph by Barry Raftery.)

with single-plank walkways across long distances (O'Carroll 2000, 2001). Trackways such as these may have been the more easily identifiable features of a network of routes used for longer-distance communications and travel. Indeed, the midlands landscape is so wet and impassable, that anybody moving through the region would inevitably have had to cross wetlands somewhere—and presumably then would have walked across a trackway made by local people. They are practical to some extent.

However, it is striking to realise that in some cases, particularly the larger Bronze Age plank and timber trackways at Corlea 6, Derryoghil 1 and other sites and the Iron Age plank trackway at Corlea 1 (Raftery 1990, 1996, 1999), the building of a

timber trackway hundreds of metres in length was equivalent in effort and communal labour to the building of a barrow or other communal ritual monument. In essence, some of these large later prehistoric trackways are essentially monumental features, deliberately designed through conspicuous use of resources and energy to demonstrate the status, wealth or prosperity of a particular dominant social group—or to lay claim to a routeway or bog. Like monuments, they speak of people's sense of memory, place and belonging in the landscape (Pl. V).

However, as interesting as they are, the large trackways are quite unusual—abnormal in fact. Such large linear causeways that traverse a bog from edge to edge represent a very small proportion of the total number of trackways sites. The archaeological surveys conducted by the IAWU and more recently by Bord na Móna's archaeological consultants revealed that most of the over three thousand or so wooden structures recorded in Irish midland bogs to date were short, narrow pathways or platforms constructed of hurdles, poles or bundles of brushwood (McDermott

Pl. V—Middle Bronze Age trackway at Derrindif, Co. Longford, dendrochronologically dated to 1612 BC (IAWU 1993a).

1998, 7; Stanley 2003, 65). While the popular or even academic perception of bog trackways may still be dominated by the massive Iron Age road at Corlea 1 which crossed several kilometres of bog, the vast majority (i.e. thousands) of wooden trackways were often only of short length, no more than a few metres long, and may have been simply designed to cross small, localised wet patches in, or at the edge of, the bog. Indeed, there is a growing sense that these were not structures designed to cross the bog, but to get into the bog. Stanley (2003, 65) has argued that by focusing on the large trackways, archaeologists may have inadvertently overemphasised the perception of raised bogs as wastelands and obstacles to travel, rather than reflecting on what the archaeological evidence was telling us what people were doing there.

These brushwood bundles, single plank walkways and platforms (see Pl. VI) indicate activity on the surface of the bog itself, rather than an attempt to cross it and should encourage a 'richer interpretative outlook in which bogs were part of everyday life for many people in the past and at different times would have represented a resource, a boundary, a barrier/refuge or a sacred place' (Stanley 2003, 65). The function of these trackways may have varied then—from site to site or even at different times of the year. In some cases, local communities were indeed attempting to maintain access to islands in the bogs, to traverse the bog itself or in some cases simply to gain access to it—to exploit the resources in its marginal woodlands and its fens, to cut peat or to graze livestock. Bogs, although not as bountiful as other wetlands, could have accommodated some hunting and fowling, the gathering of some plants for medicinal purposes, crafts and building, while also providing turf for fuel. Raised

Pl. VI—Middle/Late Bronze Age hurdle trackway at Derryoghil 30 built on peats on top of an older roundwood trackway at Derryoghil 29, Co. Longford. (Photograph by Barry Raftery.)

bogs can also be used intermittently for short-term seasonal grazing by burning the top layer of the bog, for the preservation of butter, the slow and careful seasoning of wood and the curing of leather. O'Carroll (2001) has also suggested that some late medieval and post medieval trackways at Lemonaghan, Co. Offaly may have been designed to provide access to natural deposits of bog iron ores. It is also true—and no doubt it is indicated by the large numbers of Middle and Late Bronze Age trackways discovered—that some of these structures related to religious and ritual practices, provided access into boundary wetlands (as will be discussed below).

Boglands: places for daily movement and practice in prehistory and the early medieval period

The idea that raised bogs were places of daily life and routine practices is particularly evidenced by the archaeological investigations at Derryville Bog, Co. Tipperary. This project (Lisheen Mine Project), remains the largest, multidisciplinary project on the archaeology and environment of an Irish raised bog carried out to date (Gowen *et al.* 2005; Cross *et al.* 2001). The project involved a large team of archaeologists in a sustained programme of excavation of wooden trackways, as well as a wide range of environmental scientists examining peat stratigraphy, testate amoebae, humification, plant macrofossils, wood and beetles. The project showed the slow development of the bog across time, the significant impact of peat hydrology on trackway construction and the often episodic interactions that people living beside it had with its resources and spaces.

In the Middle Bronze Age (1700–1200 BC), a settlement of roundhouses was located on the dry ground at the margins of the bog. At the same time, there was a cemetery of cremation burials, some with pottery and occasionally marked with upright wooden posts. Along the waterlogged ground at the edge of the bog, *fulachtaí fia* were used over long periods for cooking, bathing or processing hides. At this time, short trackways were constructed in the fens and wet woodlands at the edge of the bog, seemingly representing occasional forays into the bog itself. There were also a few larger stone causeways that traversed the bog itself, while other small structures on the surface of the bog merely bridged occasional watery pools. In the Late Bronze Age, between *c*. 1250–820 BC after water-levels were naturally reduced on the bog, trackway construction increased. However, the Late Bronze Age and Iron Age wooden causeways, platforms and hurdles were also constructed in a casual way, often poorly made or not secured to the soft bog surface with any vertical posts or stakes. Many of these may have been used for relatively short periods, of not more than twenty years (Fig. 6). During the Late Bronze Age and Iron Age, there were also larger structures, such as the timber causeway known as Cooleeny 18, which may well have been on a regional network of communications through the region. In the Iron Age, the dominant environment was a raised bog at the centre of the basin, but most human activities were focused on the watery fens and alder carr woodlands around the edge of the bog. By the early medieval period (AD 650–1250), hut sites and trackways indicated an increasing level of activity on the surface of the bog itself, while post rows seemed to demarcate waterlogged or unsafe locations. In other words, the Lisheen project revealed that the bog was used by people in various ways across time, from the Bronze Age to the medieval period, and that it could be regarded as a 'vernacular landscape'; a place for everyday life and practice in the

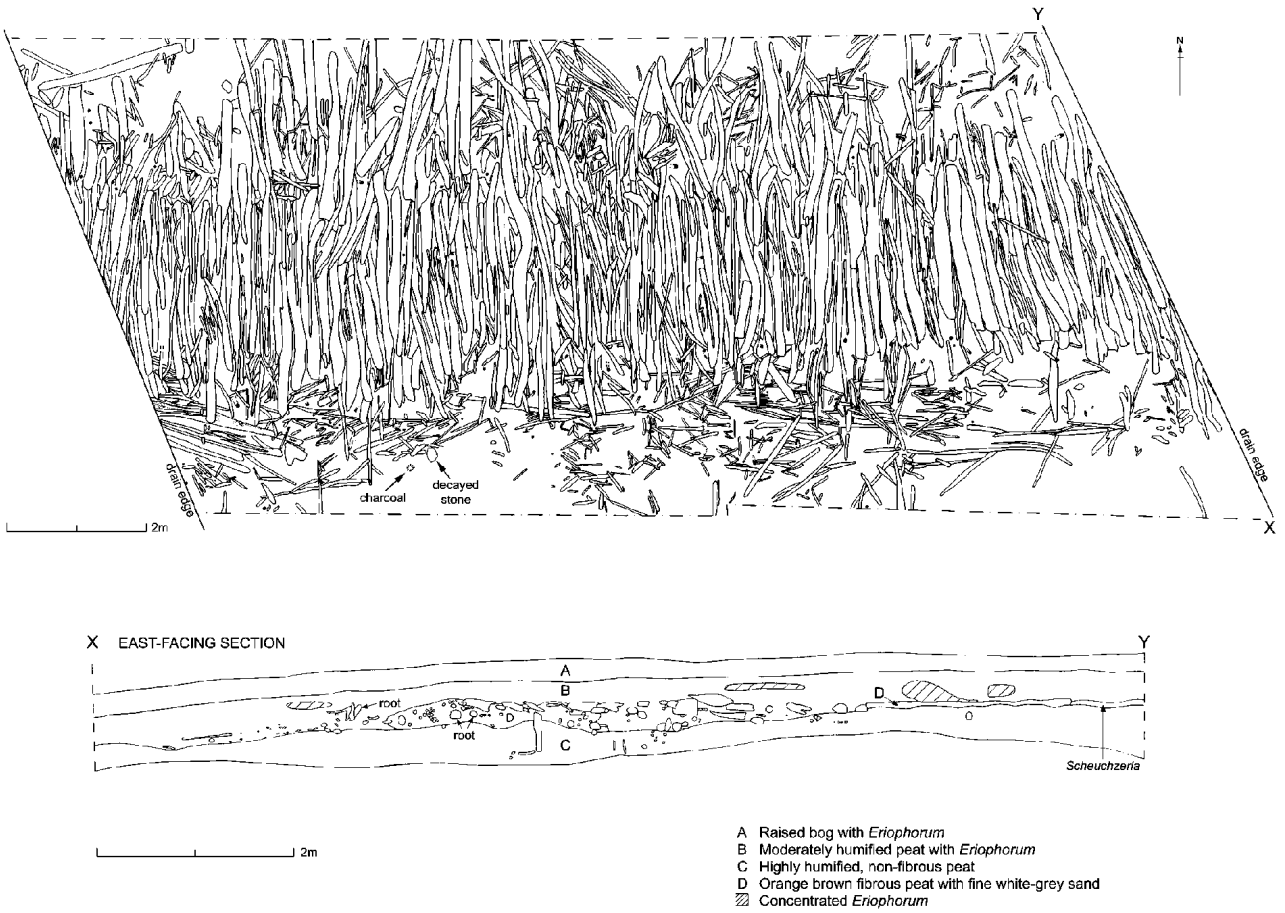

FIG. 6—Late Bronze Age/Iron Age trackway crossing bog at Cooleeny 31, Derryville Bog, Co. Tipperary that was badly affected by a bog burst not long after its construction (from Gowen *et al.* 2005).

watery fens and carr woodlands at the edge of the bog, rather than as a supernatural boundary for ritual deposits of artifacts (Gowen *et al.* 2005; Cross *et al.* 2001; Caseldine *et al.* 2001; Caseldine 2005; Caseldine and Geary 2007).

Early medieval and late medieval movement through bogland landscapes

Early medieval trackways indicate on occasion that some places situated out into the bogs were always on nodes of communication. The early medieval monastic site of St Manchan of Liath at Lemonaghan (*Liath-Manchan*), Co. Offaly is located on a remote bog island in the boglands north of the River Brosna. On the face of it, this was a typically isolated place for an early monastic site, seemingly situated at some distance from most contemporary secular settlements. A traditional interpretation would suggest that the monastic site was established on lands of poor economic worth that had been granted to the Church by local lords or kings and

that it was also in a place far from people, thus following the ideology of the desert fathers such as St Anthony, who sought out God in remote and isolated hermitages. However, IAWU archaeological surveys and excavations by ADS archaeologists in the raised bogs around the island revealed that there were numerous trackways there, some of which lead to and from the island, while others appeared to be part of a network of communications across the bog (Stanley 2003; O'Carroll and Whitaker 1999).

Dendrochronological and radiocarbon dating studies revealed that some trackways were early medieval in date perhaps used by pilgrims on their way to the monastery. An oak plank trackway excavated in Castletown Bog was dated to AD 684, which is close to the reputed date of the foundation of the monastery in AD 665 (O'Carroll 2000; O'Carroll and Whitaker 1999). A curved wooden staff or crook, with a Greek cross inscribed in the handle end, was found driven vertically into the bog near a wooden trackway dated to AD 596 (O'Carroll and Whitaker 1999). However, while there were chronological gaps in the record, there was also strong evidence that many wooden trackways leading to and from the island were dated to the Bronze Age and Iron Age. So, far from being remote, Lemonaghan should be interpreted as a place that was situated on a routeway that had been used at least intermittently since late prehistory. Instead of being located in a remote location, the early medieval monastery had been strategically sited on a routeway, while it possibly also thrived because the physical connections it maintained with the outside world. Late medieval trackways were also constructed to and from Lemonaghan—or perhaps into the bog itself. Late medieval wooden platforms at Corhill and Derrynagun may have been used for grouse hunting, or for the collection of rushes, bog cotton or other organic materials (O'Carroll 2001, 21; see Lucas 1985 for medieval literary references to toghers).

Movement into estuarine wetlands

Past movement to estuarine salt-marshes and fens, particularly in the Bronze Age and the late medieval periods, has also left traces in the form of wooden trackways, post alignments and post-and-wattle structures. In the late medieval period, fishermen also travelled out across the wetlands to access the wooden fish-traps that were used on the intertidal zone of mudflats and sands. In estuarine wetlands, trackways also tend to be short, providing access into the marshland environments themselves rather than necessarily crossing them. At Coonagh, Co. Limerick, a short Middle Bronze Age trackway (23m in length) led out from a former gravel island into the estuarine wetlands of the Shannon estuary. It was brushwood construction over a stone foundation, with an alignment of substantial oak posts along its side and dendrochronological dates from these indicates its construction and use at about 1507/1506 BC. An early medieval settlement enclosure on the Coonagh Island was also associated with a substantial but short stone causeway leading from dry ground into the salt-marshes and towards a small stream on the north bank of the Shannon estuary (Taylor 2007). A Late Bronze Age post-and-wattle structure at Islandmagrath, Co. Clare, discovered during intertidal archaeological surveys on the Fergus estuary, may have been a causeway across a stretch of mudflats, perhaps designed to give access to salt-marshes for

grazing sheep or cattle. However, the nearby discovery of a Late Bronze Age gold bracelet (Fig. 7) raises the possibility that such structures were also associated with ritual activities in the wetlands (O'Sullivan 2001a). At Newrath, on the Suir estuary, archaeological excavations have revealed evidence of long-term occupation in the Mesolithic, Bronze Age, Iron Age and medieval period as well as the physical traces of people's short journeys out into the salt-marshes (Wilkins 2007).

These all testify to short journeys and short-term stays in the salt-marshes and fens to graze sheep or cattle, to hunt for wildfowl, gather reeds for thatching and to fish. One of the striking aspects of estuarine archaeology is both that persistence of presence across time despite radically different environments (often caused by gradually rising sea levels)—and the occasional sense that it is the estuarine archaeological sites themselves that enable people's knowledge and understanding of their environment to be recreated across time. In the Middle Ages, wooden fish-traps were often constructed on estuarine mudflats to trap fish moving about with the tides. Fishermen would have had to move out onto the mudflats, build, repair and manage the fish-traps,

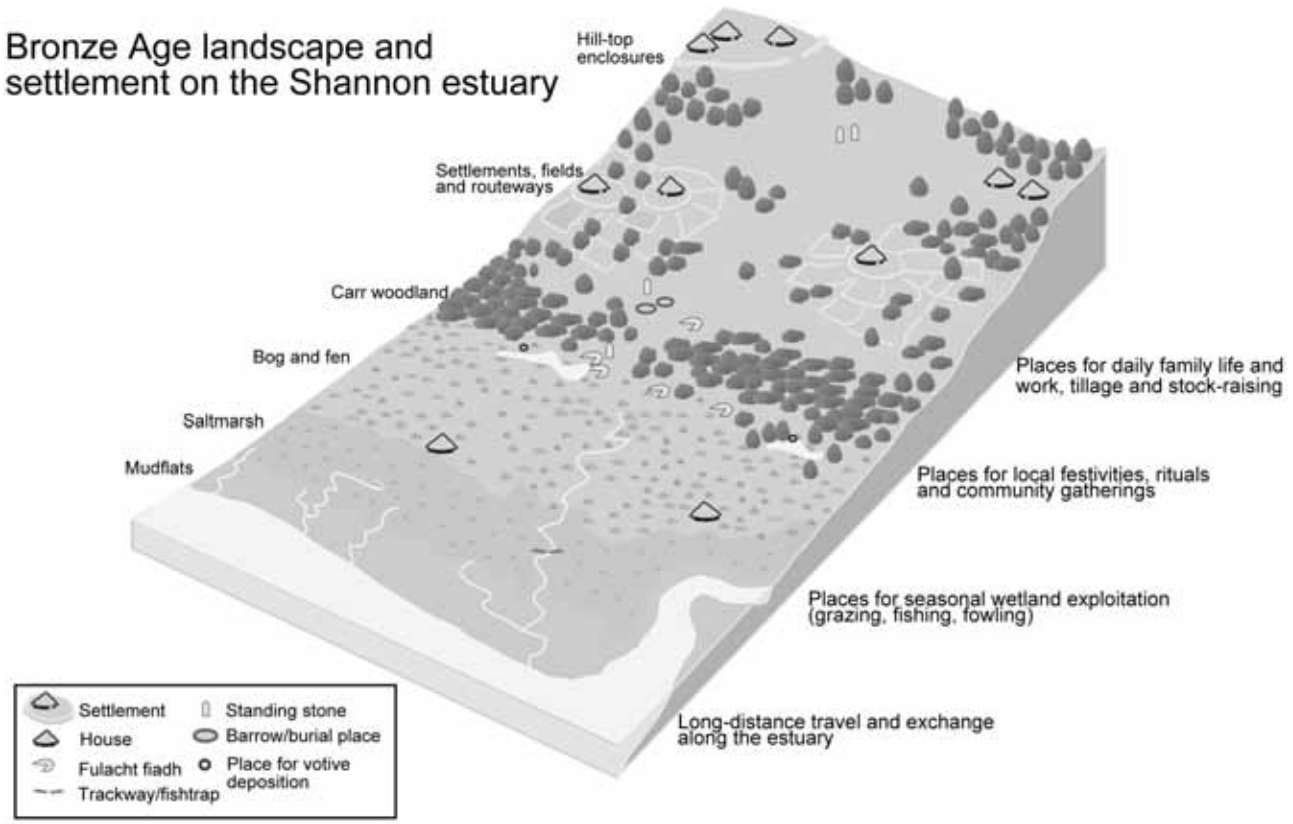

FIG. 7—Reconstruction image of Bronze Age settlement and landscape on the Shannon estuary. Recent archaeological discoveries of trackways and platforms dating to the Middle Bronze Age, Late Bronze Age and Iron Age on the Shannon estuary, Fergus estuary and Suir Estuary (i.e. at Newrath, Co. Kilkenny) indicate patterns of short journeys into estuarine marshlands (from O'Sullivan and Breen 2007).

before retreating with the tides. In recent years, archaeologists have been able to trace surprising patterns in fish-trap use and re-use in estuarine landscapes. On the Shannon estuary (O'Sullivan 2001a, 2003a, 2003b, 2005), Strangford Lough (McErlean and O'Sullivan 2002) and also in Britain on the Severn Estuary (Godbold and Turner 1994; Turner 2002; Nayling 1997) and Essex estuaries (Gilman 1998; Strachan 1998; O'Sullivan 2003c, 452–4), there is often significant archaeological evidence for striking continuities in location, form and character of the fish-traps.

Working the tides: interpreting fish-traps

Wooden fish-traps would have been exposed to damage from erosion and waves and would have been repaired and rebuilt frequently, with post-and-wattle fences mended, buttressed with braces and their fragile baskets replaced. On the Blackwater estuary, Essex, there is plenty of evidence for rebuilding of fisheries over centuries, but in interesting ways (Gilman 1998; Strachan 1998; O'Sullivan 2003b, 452–4). At Collins Creek, radiocarbon analysis of a complex of five V-shaped Anglo-Saxon fish-traps indicated construction, 'piece-meal repair, minor modification and radical alteration' from the mid-seventh century to the beginning of the tenth century AD (Hall and Clarke 2000; O'Sullivan 2003a, 452–3). On the Severn estuary, at Magor Pill, at least seven V-shaped fish-traps were used within a small area during the twelfth century AD. Nayling's (1999) detailed dendrochronological studies indicated that some were in use about AD 1120, while a second phase of fishing began about AD 1150, almost 30 years later (a significant gap for people whose average life-span was about 35–40 years). This actually may indicate that the first structures had been out of use, before people came back and rebuilt what must have been quite dilapidated structures that had been abandoned for a generation (Nayling 1997, 1999).

Similar archaeological evidence can be traced in Ireland. On the Shannon estuary, medieval wooden fish-traps of much the same type and size were used between the tenth and thirteenth centuries AD, suggesting that although there was significant ethnic, social and political change in the landscape (i.e. the Anglo-Norman colonisation of Limerick and Clare), local fishermen continued to build, use and manage fishing structures, which remained basically the same. It is likely that Gaelic Irish fishermen continued to work the foreshore in the manner of their ancestors (O'Sullivan 2003a). It is also possible that late medieval fish-traps contributed to a sense of history out on the estuary (Pls VII and VIII). Post-medieval (i.e. seventeenth century and onwards) fish-traps tend to be in the same locations, fishing much the same channels—as can be seen at Bunratty and at Bush Island, Co. Clare, where late medieval fish-traps sit beside post-medieval structures (O'Sullivan 2005; Van de Noort and O'Sullivan 2006, 85–8). Indeed, we might envisage that medieval fish-traps survived effectively as archaeological sites of rotten wooden posts, actively shaping how later fishing communities lived and worked in these estuarine landscapes—the ancient stumps of posts informing them of past fishing grounds. Although fishing communities worked within evolving traditions, the pre-existing fish-traps might have enabled or perhaps even encouraged continuity of practice with the past (O'Sullivan 2003a).

Pl. VII—Reconstruction painting of a medieval fishtrap at Bunratty, Shannon estuary, Co. Clare. (Painting by Simon Dick, from O'Sullivan 2001a.)

Pl. VIII—Medieval wooden fishtrap (dated to AD 1410–30) at Boarland Rock, Fergus estuary, Co. Clare. These wooden structures would have survived to view for centuries after their abandonment, creating a sense of the human past on the estuarine mudflats amongst fishing communities. (Photograph by Mary Dillon.)

Boundaries; Liminalities; Meanings

Between wild and domesticated?

In the past, some bogs, lakes and rivers also seem to have been understood as boundaries and edges. As much as wetlands were spaces for living and movement, they could paradoxically also be liminal, permeable spaces of unusual symbolic and ideological power, located between worlds where religious and ritual activities might be expected. Undoubtedly, we must be careful with these interpretations, as our view is naturally one of the 'outsider'. Apart from our reasonable fear of dangerous, watery places, where death through drowning or exposure is always a possibility, we also have an inherited rationalist view of bogs, marshes and fens as essentially 'wild' spaces—useless, uncultivated in contrast with the 'domesticated' world, and out on the edge beyond the 'normal' landscapes of home, work and daily life (Brück 1999). Nonetheless, there is a strong sense in the distant past—and indeed more recently in medieval literature and modern folklore—that wetlands were seen as spaces that were closer to the gods, ancestors or ghosts—or at least that they were spaces where forces beyond human control had to be negotiated with.

Mesolithic and Neolithic deposition in wetlands

The best-known archaeological phenomenon that seems to indicate the spiritual importance of wetlands is the votive deposition of objects in wet environments (e.g. Eogan 1983; Cooney and Grogan 1994; Bourke 1996). While Bronze Age and Iron Age activities dominate our perception of this practice, Cooney and Grogan (1994) have demonstrated that there is evidence for depositional activities in wet environments in other periods too—particularly in the Neolithic and Mesolithic. Early Mesolithic deposits of cremated human bone (dated to *c*. 7530–7320 BC and 7090–7030 BC), with microliths and a stone axe in two pits are known from a riverine location on the banks of the River Shannon, at Hermitage, Co. Limerick (Collins and Coyne 2006). In the Late Mesolithic, human remains have only been found in coastal shell middens close to the seashores—themselves liminal spaces that were so important in social and economic terms to hunter-gatherers. At both Rockmarshall, Co. Louth (Mitchell 1949), and Ferriter's Cove, Co. Kerry (Woodman *et al.* 1999), pieces of human bone were found in midden deposits, themselves rubbish deposits, and at Ferriter's Cove there were also caches of stone axes that may well have been some type of ritualised or structured deposit (O'Sullivan and Breen 2007). In the Neolithic, there are also hints that rivers, lakes and fens were places of deposition of large numbers of stone axes. Neolithic stone axes are particularly common from river fording places such as across the River Shannon at Killaloe, Co. Clare, at Toome on the River Bann, Enniskill on the River Erne, and Riverford on the Barrow (Cooney and Mandal 1998; Bourke 1996, 33), suggesting ritual activities at key nodes in early prehistoric communications across the river (Condit and O'Sullivan 1999; Cooney 2001). Occasionally, Neolithic human remains are known from wetlands; such as the isolated early Neolithic human skull fragment found with basketry and lithics at Carrigdirty Rock, Co. Limerick on the Shannon estuary (O'Sullivan 2001a), and the Neolithic 'bog body from Stoneyisland Bog, Co. Galway (Ó Floinn 1995; Cooney 2000, 129).

Bronze Age and Iron Age deposition in wetlands

In the Middle Bronze Age, dirks, rapiers and axes were being placed in rivers (Bourke 1996, 86–7). By the Late Bronze Age, there is a significant increase in the practice of the deposition of hoards of weapons, tools, ornaments, bronze rings and musical instruments as well as single objects (e.g. spearheads, swords, socketed axes) in wetlands (Eogan 1983; Cooney and Grogan 1994; Bourke 1996). In the Iron Age, swords, spearheads, spear-butts, personal ornaments, bronze cauldrons, horse trappings and rotary quernstones were also placed in rivers and bogs (Raftery 1994). Both Cooney and Grogan (1994) and Bourke (1996) have shown that the patterns of deposition of Bronze Age and Iron Age metalwork in Irish bogs, lakes and rivers are essentially similar to what has been observed on the Continent, with a predominance of weaponry in riverine contexts. There has been a range of explanations for these later prehistoric activities, accidental loss during conflict or travel, or deposition for religious or socio-political reasons.

Bradley (1990) in his long-term overview of the practice throughout prehistoric Europe, has described it in terms of 'gifts to the gods'—an activity with a clear socio-political and economic function. Indeed, this 'gift to the gods' explanation has a long tradition in research, especially in Scandinavia (e.g. Worsaae 1866) and it is essentially based on the idea that such deposited objects were irretrievable and that they were effectively removed from the human sphere by being placed together in the watery context at one point in time. Prehistorians have suggested a range of reasons why prehistoric communities 'destroyed' such significant accumulations of wealth. Larsson (2001) has argued that objects were placed in wetlands specifically because these were life-giving environments, where contact with the other world of gods and ancestors was possible. More recently, it has been suggested that 'structured deposits' of Bronze Age and Iron Age objects, whether they be in settlements and dwellings (Hill 1995; Brück 1999) or in the wider (often) wet landscape all followed certain cosmological rules governing the discarding and disposal of artefacts, human remains and rubbish (e.g. Becker 2006, forthcoming; Bourke 2001). However, although the 'destruction' of prehistoric objects in wetlands as gifts to the gods has been a long held explanation, it seems likely that votive deposition in watery places may have had a wider range of social and ideological meanings. Needham (2001) has suggested that there are various reasons why bronze objects might be retrieved from votive sites—to deal with a scarcity in metal resources for example. Becker (2006) has also suggested that many Late Bronze Age and Iron Age deposits in Irish bogs were not necessarily irretrievable and that in fact, the possibility of retrieval of the objects suggests that they were used for ceremonies that were episodic and reiterative, rather than final and destructive.

Why wetland environments were chosen (although hoards and single finds are of course known from drylands as well) seems likely to have been because these were effectively 'liminal spaces' in social, ideological and religious terms. The concept of liminality is a notoriously fluid one—often linked to time, space or even persons—but in anthropological terms it can be linked with the rites of passage as described by Van Gennep (1906) to describe the formalised rituals and practices that accompany one's transition from one particular state into another, especially the rites

associated with birth, reaching adulthood, marriage and death. During such rites of passage, symbolic or 'real' thresholds need to be crossed and these crossings are often accompanied by specific rituals. In prehistory, archaeological evidence suggests that rivers, lakes and bogs were perceived as such 'thresholds' or liminal boundaries that were involved in some way with such rituals. Indeed, wetlands seemed to have served particularly as boundaries when they were *actually* crossed as the focus of deposition was often in quite specific or key 'crossings'; such as important fords over rivers, the shallow waters off crannogs and islands; and the wet lagg zone between drylands and open raised bogs (see below).

Indeed, the use of the broad term 'wetlands' masks important aspects of prehistoric object deposition in specific environmental contexts. It is clear that types of objects are most closely associated with particular wet environments. Grogan (2005, 172) states that although over half of all Late Bronze Age Dowris hoards (Pl. IX) were found in 'wetlands', a closer analysis reveals that 52% came from bogs, 3.4% came from lakes and only 2.3% came from rivers (Cooney and Grogan 1994, 158–67, Figs 8.11–8.15). In contrast, Middle

Pl. IX—The Late Bronze Age 'Dowris' hoard of objects (weaponry, axes, gouges, knives, razors, caludrons, horns, crotals, sandstone rubbers and other things) recovered from a bog near two lakes in the Whigsborough area, Co. Offaly, in the 1820s. (Image National Museum of Ireland.)

Bronze Age basal-looped spearheads, dirks and rapiers and Late Bronze Age spearheads and swords have overwhelmingly been found in rivers, while Late Bronze Age ornaments are rare from rivers (O'Carroll 1986; Bourke 1996). In terms of contexts, it is worth remembering that even these general terms—lakes, rivers and bogs—are probably too broad. Past societies probably understood their landscapes not in modern environmental or ecological terms (e.g. wetlands as a term only originates in the 1960s), but in terms of particular locales—this mountain, pool or stream—and that these *specific* locales became a focus for specific acts of deposition (Bradley 2000). As Cross May *et al*. (2005, 351) have stated, 'not all bogs are suitable for votive deposits and not all objects in bogs are there as a result of ritual'. Bourke (1996, 34–93) has shown that Bronze Age and Iron Age swords from the River Shannon, the River Bann, the River Barrow and the River Erne were found not in random locations along the river, but at key fording points and shallows across them. Indeed, some swords may well have been 'put away' for a time, but were retrievable, but social and ideological sanctions ensured that they stayed in the river (as an analogy, in Irish folklife, clothes, dolls, coins and crutches were all highly visible votive deposits at holy wells, but were rarely removed by somebody else).

Intimate, local places

Indeed, Bronze Age and Iron Age finds from 'bogs' may also have been originally deposited in more precise, specific types of wet contexts at the edge of bogs. Instead of being extravagantly flung into water—as in the Arthurian myth—such objects may have been carefully placed in shallow water of fens and pools, where they may well have remained visible, accessible and thus more powerful. It is known that most traditional peat cutting in the nineteenth and early twentieth centuries—when most antiquarian collections of prehistoric metalwork were made—was carried out on the periphery of raised and blanket bogs (Doyle and Ó Críodáin 2003). In contrast, recent archaeological surveys in peatlands have tended to be well out on the surface of the bog itself, avoiding the margins which is usually now cut away and reclaimed by heavy industrial machinery (McDermott 2007). It is interesting then that these modern bog surveys have discovered thousands of wooden trackways, but relatively few objects. Certainly, twenty years of peatland surveys have produced no massive Late Bronze Age hoards like that found in the nineteenth century at Dowris, Co. Offaly (Eogan 1983). This perhaps reveals that Bronze Age and Iron Age objects were originally deposited at the edges of bogs, in the watery, reedy and overgrown lagg zones between land and open raised bog (Conor McDermott, personal comm.). Only subsequent peat growth has created the sense that these were originally bog deposits (see Van de Noort and O'Sullivan 2006, 59 for other examples). Occasionally, recent archaeological discoveries investigated properly have demonstrated this. At Tamlaght, Co. Armagh, a Bronze Age hoard was recovered from archaeological contexts with tree roots, suggesting the objects were originally placed in carr woodlands (Ó Néill and MacDonald 2004). In other words, objects seem often to have been originally placed in specific (and occasionally marked) locations in the

landscape—such as the Late Bronze Age hoard from Rathtinaun crannog, Co. Sligo which was probably marked with wooden stakes or the Late Bronze Age gold hoard from Mooghaun, Co. Clare, which may have been in a *fulacht fia* mound visible at the lake edge (Condit 1996).

A reedy pool in a wood is a more intimate, localised space than the broad term 'wetlands', or even lakes, bogs and rivers would suggest—and it enables other theories too. Becker (2006) has recently argued that the deposition of Bronze Age and Iron Age objects is not just type- but also context-specific and that there is a strong sense of potential retrievability of objects. In at least some scenarios, the objects could have been visible and easily identified lying in the water (a collection of objects in a shallow bog pool would be easily seen), to be recovered, reused or even redeposited at a later time, so objects could have moved back and forth with shifting social and ideological roles and meanings across their biographies. Bourke (1996) has provided interpretations for the location of Bronze Age objects from rivers, while Becker (2006) has dealt with hoards from bogs, lakes and dryland contexts. Weaponry is dominant in rivers, while ceremonial items (cauldrons, horns and gold) tend to be mostly found in bogs. It is probable that this reflects different conceptualisations of these wet places. It is also likely that later prehistoric communities had quite specific ideas about the properties of different *objects*, their *places* of deposition and the *social identities* of the social groups involved. In other words, weaponry and rivers may relate to warrior activities, while bogs and ceremonial items may relate to communal expressions and performance of status, power or wealth.

Organic objects and human bodies in wetlands

A range of other types of Bronze Age, Iron Age and medieval organic objects were also deposited in wet places; such as wooden kegs or tubs of bog butter (typically Iron Age in date; Downey *et al.* 2006); wooden cauldrons, troughs, bowls and dishes, wooden archery bows and occasionally leather bags, shoes and other organic items (Earwood 1993, 8–17). It seems likely that some of these objects were also ritually deposited (although storage of butter in bogs for preservation, or putting wooden rough-outs in bogs to prevent their seasoning is also a possibility). Recently, it has been possible to establish a link between organic object deposition and bogland activity. At Edercloon, Co. Longford, Bronze Age, Iron Age and early medieval wooden plank and brushwood trackways were oriented to provide access into the bog. Beside these trackways were placed up to 51 wooden artefacts—including alder bowls, tubs and troughs; alder and ash wood block wheels and wheel-rims, spear-shafts, mallets and other things. It is evident from Edercloon that wetland deposition of organic objects was a highly-structured activity (Moore 2007)

Bronze Age wooden figures representing human forms (Fig. 8) are also known from a bog at Ralaghan, Co. Cavan (Mahr 1930; Coles 1990), from Lagore Lake, Co. Meath (Hencken 1950; Coles 1990) and also from the Iron Age trackway at Corlea, Co. Longford (Raftery 1996). More recently, remarkable wooden anthropomorphic figures have been found associated with Middle Bronze Age trackways

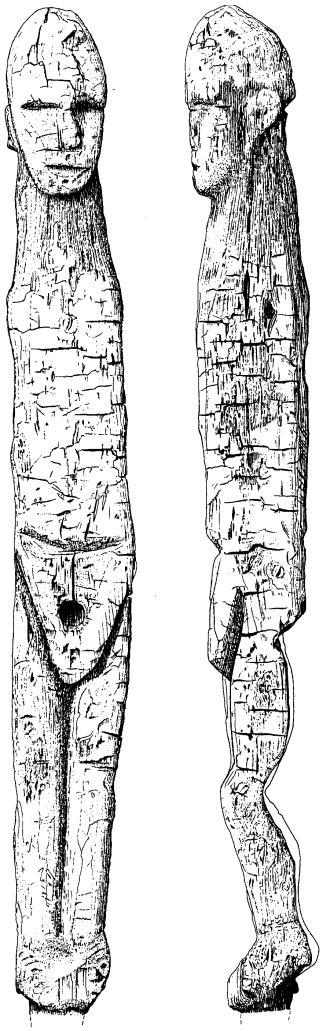

FIG. 8—Middle Bronze Age yew-wood anthropomorphic figure found in a bog at Ralaghan, Co. Cavan; after Coles 1990.

at Ballykilleen townland in Cloncreen Bog (Corcoran 2003; Stanley 2007, 184–5) and at Kilbeg, Co. Offaly (McDermott *et al.* 2003). The latter figure was a wooden (alder) trunk situated near two trackways dated to 1425±9 BC and 1454±9 BC. There was a distinctive object, 2.3m in length, worked to a point at one end and roughly hacked and carved to suggest a bulbous head and an almost starved human torso with projecting 'ribs' along the other. It was radiocarbon dated to 1739–150 BC (Stanley 2007, 186–9, Fig. 58). Other figures are known in Ireland and throughout northern Europe and it is interesting that some of these anthropomorphic figures were also associated with wooden trackways, suggesting that past human activities on bogs could comfortably involve social, economic and ideological practices—rather than a strict divide between sacred and profane.

These wooden 'human bodies' obviously must be related in some metaphorical way to the actual human bodies that have been recovered from bogs—perhaps, the most remarkable of all 'organic objects' in wet places. Raised bogs are located at the edge of the world, and apart from cutting turf, it is often thought that little can be done in them for human benefit. This view envisages bogs as dark, dangerous places, where spirits and the dead lived. Treacherous in summer, they would have been almost impassable in winter when rainfall made their pools and hollows difficult to cross safely. For that reason, when the nineteenth and early twentieth century's peat cutters came upon human bodies with perfectly preserved clothes, hair and fingernails, it was often assumed that these were the corpses of accidental drowning and murder. In recent times, it has been shown that many of these bodies are of great antiquity, dating from the Neolithic to the late medieval period (Ó Floinn 1988, 1995).

Recent remarkable discoveries of Iron Age bog bodies at Oldcroghan, Co. Offaly and at Cloneycavan, Co. Meath, has led Kelly (2006) to review past discoveries and to suggest that there were distinct ritual practices evident in past deposition of Iron Age human remains in bogs. In particular, he notes that many Iron Age bog bodies have been discovered in those bogs that straddle modern barony boundaries; that these may also have been the political boundaries of the *túatha* of the early medieval period and thence perhaps also the earlier boundaries of Iron Age kingdoms. Post-mortem analyses have shown that many of these unfortunate individuals experienced significant acts of violence; such as decapitation, hacking and wounding, the cutting off of their nipples—all mutilations that seem to be ritualistic. Kelly (2006) also suggests that the deposition of Iron Age objects in general relates to issues of political boundaries. He suggests that the Iron Age hoard from Lisnacrogher was also on a boundary; that Iron Age wooden yokes, horse harness, bridle bits, weaponry, leather objects, cauldrons and tubs of butter from bogs, lakes and even some objects from coastal seashores and marshes were also placed on boundaries. Kelly (2006) argues that all these deposits relate to ideas of the land and fertility (e.g. bog butter, quernstones and other agricultural implements), sacral kingship, the maintenance of sovereignty and power and the protection of political boundaries in the Iron Age landscape.

It might also be noted that many of these objects—human bodies, bronze cauldrons, wooden troughs and tubs of butter can be metaphorically related to each other. A good example is the Iron Age alder-wood vessel (Pl. X) found at Toor Bog, Co. Westmeath (Murray 2000), where the quality of archaeological and environmental evidence enables a cultural biography of the object to be written (O'Sullivan and Van de Noort 2007, 71–2). This massive wooden container had been repaired at various stages, and initially seems to have been treated with care. At a later stage in its life, it was fire-scorched and damaged, and may have been used for cooking, bathing, processing textiles or tanning leather. At the end of its life, it was carried out onto a bog and placed in a wet, boggy pool, where it was pinned into position using a sharpened hazel stake—much as some Iron Age bog bodies were treated. Indeed, the Iron Age wooden trough could itself be seen as a high status vessel for liquids, much as a human body could be viewed as a container of fluids—so there may be connections between these ritual activities.

Pl. X—Iron Age alder-wood vessel, repaired on several occasions and finally pinned down using a sharpened hazel stake in a wet, boggy pool at Toor Bog, Co. Westmeath, (Photograph by the Irish Archaeological Wetland Unit, UCD.)

Still liminal spaces? Perception of wetlands in the medieval mind

While our only evidence for the perception of wetlands in prehistory is archaeology, for historic periods we also can access people's *mentalités* through written sources. In the Anglo–Saxon poem *Beowulf*, the monster Grendel's lair is a fen and the hero has to go down into the water to fight and destroy his mother. There are similar motifs in early medieval Irish narrative literature where heroes and saints often travel to an underwater realm and encounter other-worldly beings, while many medieval Irish

saint's lives depict lakes, bogs and marshes as places where various other-worldly creatures are encountered and defeated (O'Sullivan 2004 for a review of the perception of lakes and islands). In most of these scenarios, it is clear that the story is intended to extol the spiritual prowess of a saint, rather than describe contemporary religious beliefs, but some of the incidents described may have been adapted from contemporary oral folklore in the Middle Ages and do indicate the perceptions of wetlands as liminal spaces in historic periods too.

It is also evident from literary sources that watery places were liminal boundaries in people's imagination, used for political negotiations, battles, military assemblies (Ó Ríain 1972). Early Irish poets also sought wisdom from liminal spaces, including the watery edges of lakes and rivers (Nagy 1981–2; Ó hÓgáin 1999, 76). Intriguingly, although medieval objects recovered from rivers in no way matches the scale of deposition in the later prehistoric period (Bourke 2001, Fig. 91), there are hints in the archaeological record that some early medieval, Viking Age and late medieval objects in Irish wetlands might also have been 'structured deposits'. Early medieval and Viking Age axes have been recovered in large numbers from Irish rivers, while early medieval ecclesiastical metalwork (chalices, fragments of book shrines, bronze altar basins) found in rivers or in lakes off crannogs may not have been accidentally 'lost' but deliberately deposited in specific locations either for later retrieval—or for other reasons (destruction, religious offerings, etc.). There are other intriguing examples from the early medieval period, such as the wooden pilgrim's staff found driven vertically into the bog next to a wooden trackway at Lemonaghan (O'Carroll 2000, 2001, 17) and the recently spectacular find of an early medieval psalter bound in a leather satchel at Fadden, Co. Tipperary, also strangely located in a bog (Kelly *et al.* 2006). It is worth noting that the deposition of Viking Age weaponry and other artefacts beside wooden bridges in Scandinavia is interpreted in religious rather than practical or common-sense terms. In Viking Age Ireland, there are certainly a range of deposits such as silver hoards that could relate to similar practices (Sheehan 1998). In other words, we should probably reflect that people in the early medieval period may have been involved in the 'structured deposition' of objects in wetlands. It is also likely that wet environments—rivers, lakes and bogs—also served as both boundaries between this world and the other world, while at the same time being real boundaries between early medieval political territories—much as they have been for millennia.

Conclusions

Wetlands and wet environments dominate the land of Ireland—and have done so for thousands of years. The archaeological and environmental potential of these wet environments is unparalleled, apart from the fact that they hold a wonderful heritage and cultural resource for future generations. To live on this island at any time in the past required people to engage and interact with these environments in various ways. Undoubtedly, people have used the resources they provided across time, whether they be raw materials, foods or the places they hold. They have moved through these landscapes, both in local intimate places and across large, featureless boglands, and have touched other worlds in their beliefs and practices in these wet environments. However, people have also used these landscapes to build communities, to shape and

negotiate their own social identities and to make social worlds amidst environments of extraordinary natural power.

Across time, how people engaged with bogs, lakes and marshes has changed significantly. In the Mesolithic and Neolithic, both hunter-gatherers and farmers used wetlands in various ways, often for economic resources, more often in social terms. In the Bronze Age, entire landscapes that had been formerly empty began to be encultured in intense ways, with wetland settlement, trackway construction and ritual activities all indicating the changing character of society and the wider landscape. At the same time, bog, lakes and pools could be viewed both as sacred places, or as places for daily life and work—the distinction between two forms of social activity should probably not be overemphasised. In the early medieval and late medieval periods, while some practices fell away (such as the deposition of objects and bodies, as was occurring in the Iron Age), it was still possible for wetlands to be seen both as places for inhabitation, daily work and routines—and as political or ideological boundaries. By the post-medieval period (barely and inadequately explored here), the perception of wetlands was shifting and another study remains to be written on how wetlands were transformed, reclaimed, ditched and drained from the seventeenth century onwards (see Lyttleton and O'Sullivan, forthcoming). The world we inhabit—and the ways in which we imagine and use wetlands—undoubtedly reflects the changed perception of wetlands that these modern transformations brought about.

Undoubtedly, these transformations continue. The large-scale industrial exploitation of boglands will undoubtedly reveal more and ultimately destroy all the types of archaeological and environmental information described above. Industrial, pipeline, infrastructural and housing developments will continue to impinge on buried wetland sites. Climate change may desiccate wetlands or cause flood conditions that will erode them. Sea-level rise will cause the scouring of the mudflats and salt-marshes of estuaries and erode archaeology, or threaten the hidden deposits in alluvial wetlands. In these contexts, monitoring and mitigation is imperative. While undoubtedly all developers must continue to pay for the mitigation of any destruction of wetland archaeological sites, both state, archaeological consultancy and university sectors must collaborate to enhance the quality and range of evidence that can be acquired from wet environments; to ensure that the highest standards of conservation, protection and investigation prevail—and indeed that wetland archaeology is demystified and archaeologists and environmental archaeologists are sufficiently educated and trained to do these studies. The investigation of archaeological sites in wet environments without an ambitious multidisciplinary research agenda is not merely an opportunity lost, it is an opportunity thrown away.

McDermott (2007, 28–9) has outlined the priorities for future work in peatlands, but they can usefully be taken to stand for all future work in wet environments; recurrent survey and excavation in both old and new localities, regions and island wide; detailed and representative site investigations; a more enhanced programme of palaeogeographical modelling to match the cultural and archaeological evidence; publication and the integration of wetlands sites within their wider dry-land landscapes, both nationally and internationally and an appropriate scale of response to

the loss of both cultural and environmental information. In the end, we have to do this because the stories of Ireland's past can best be reconstructed from its wet environments.

Acknowledgements

I dedicate this paper to Professor Barry Raftery, who 21 years ago gave me a start on his archaeological excavations of the Iron Age Corlea trackway, giving me a lifelong fascination with wetland archaeology.

I also thank and acknowledge my colleagues and friends for discussions, information and ideas; particularly Robert Van de Noort, John Bradley, John Coles, Bryony Coles, Martin Bell, Nigel Nayling, Richard Brunning, Donald Murphy and Sinclair John Turrell. I would also like to thank Conor McDermott, Robert Sands, Katherina Becker, Graeme Warren and Aimee Little who all read previous drafts of this paper and I thank them for their critical comments and information—all errors in this paper are obviously my own.

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