

# The Decline of the Cow: Agricultural and Settlement Change in Early Medieval Ireland

Finbar McCormick

*Abstract.* This article considers cows and dairying as the basis of value system in early societies, particularly in Ireland. In a very few instances is it possible to demonstrate that such systems existed. Where this occurs cows and dairying are imbedded in the social or religious institutions of these cultures. Cattle had a value and meaning much greater than their economic worth (food, hides, tallow &c.). Such systems, however, do not allow economic development because dairy produce does not easily lend itself to the production and accumulation of significant surplus nor is dairy produce particularly suitable for economic expansion based on trade. Its perishable nature militates against both roles. To develop political power that is based on economic power and wealth it is necessary to change the emphasis from livestock to cereal production.

*Keywords:* Cows, dairying, ringforts, faunal remains, medieval Ireland, Vedic India, Mesopotamia, pastoralism, agriculture, grain-growing, social change.

*Finbar McCormick*

*School of Geography, Archaeology & Palaeoecology, Queen's University, Belfast BT7 1NN  
f.mccormick@qub.ac.uk*

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Evidence for the livestock economy of early medieval Ireland is derived from two main sources, zooarchaeology and historical documents. The large body of documentary material, particularly that dating to the seventh and eighth centuries, provides a wealth of detail on the agricultural and social basis of society that is unparalleled in the contemporary western world. Indeed, prior to the high medieval period, agricultural information of comparative detail is available only for early Mesopotamia and Rome. Information is available, too, for Indian Vedic society but it is much less direct, being for the most part derived from religious texts. These latter sources, however, are important in the context of the present discussion because they reflect the only society, besides that of early medieval Ireland, where cows and dairying played such a central role.

## CATTLE AS A BASIS OF WEALTH: IRELAND

Data concerning early Irish agriculture are found primarily in legal sources (Kelly 1988). Supplementary information is supplied by hagiography, ecclesiastical legislation, and literature (Hughes 1972). The laws, however, provide the

clearest and most detailed evidence for the structure of the agricultural economy since much legal material deals with issues concerning land, crops, and livestock. The core legal texts reflect life in Ireland during the seventh and eighth centuries AD (Kelly 1988, 225). They mirror a society that is rural in character and one in which livestock played a particularly important role. Settlement was based on dispersed farmsteads, i.e. the ringfort, a settlement form designed primarily to protect livestock (McCormick 1995).

Cattle, more specifically cows, were of exceptional importance in the lives of the early medieval Irish (Lucas 1989, 3–4). The cow was the basic unit of wealth and one's social status in this rigidly hierarchical society was to a large extent based on the number of cows that one had at one's disposal. Giving and receiving cows formed the basis of many contracts between members of different social ranks, and these contracts ensured stability within society. Fines, tribute, and marriage prestations were generally paid in cows and cattle raiding was regarded more as a form of political competition than criminal activity. There was a certain flexibility in that some payments could be made in either cattle or silver but the authors of the law tracts assume a consistent value for cattle (Kelly 1997, 57), thus acknowledging their position at the core of the value system.

While the cow is the unit of value, a qualification must be added in that it is more specifically the cow accompanied by its calf (Kelly 1988, 113). The calf was necessary to induce lactation and, furthermore, in early medieval Ireland the cow could not be easily milked without the calf being present (McCormick 1992). The value of the cow lay in its ability to provide milk and other dairy foods. Accordingly, Irish law notes that a 'dry cow' has only half the value of a milk cow (Kelly 1997, 65). The overriding importance of milk is demonstrated in a legal judgment dealing with a 'calf of two cows'. It states that 'a cow which bears a dead calf, which is put to another calf: it [the milk] belongs to the mother alone for that is not done for the sake of the calf *but for the sake of the milk of the cow*' (ibid. 547). Essentially, it was the milk rather than the animal itself that accounted for the value of the cow in early Ireland.

It is not surprising that, as a consequence of this value system, dairying was of central importance in the diet of the period. The tenth-century secular *Tochmarc Ailbe* states bluntly that milk is the best food as it 'is good when fresh, good when old, good when thick and good when thin' (quoted in Kelly 1998, 323). The range of dairy products in Ireland was extremely wide when compared with other early societies. The *Vision of Mac Conglinne* (early twelfth-century) pro-

vides a rather prosaic summary of the range of dairy products consumed: ‘very thick milk, milk which is not very thick, milk which is thick but flowing, milk of medium thickness, yellow bubbling milk the swallowing of which requires chewing’ (Meyer 1892, 101; Kelly 1997, 323–24). Milk was drunk fresh in its natural form or in a thickened form which was made by the addition of calf’s rennet. Cream was consumed while fresh but the yellow hardened skin that formed on the surface of older cream was also consumed separately. Skim milk, the by-product of cream making, was also consumed, often as a penitential drink (Kelly 1997, 324–40).

Butter was consumed and is specifically identified as a high status food and was consumed either in a fresh form or heavily salted (Ó Sé 1949, 64). Buttermilk, the side product to butter, was also drunk when fresh. Many kinds of cheeses were consumed but the terms used usually give little hint as to the form or method of manufacture (Ó Sé 1948). Kelly (1997, 327–30) identifies nine distinct types of cheese ranging from *gruth*, soft curds, to *tanach* which was hard enough to be used as a missile for the slaying of Queen Medb. Additionally, whey, the by-product of cheese-making, was consumed in different forms.

#### ROME AND MESOPOTAMIA

It is relatively unusual for cattle to form the basis of wealth in early societies, but much more unusual for wealth to be based on milk. In most early societies cattle were simply regarded as a source of food, hides or traction and were one of a wide range of economic assets that one could possess. The Roman world serves as a good example of this general and more restricted attitude towards the value of cattle. White (1970, 276) summarises the role of cattle when he states that ‘the ancient Italian cattle breeder has only two aims in view; first, the production of good working animals [and] secondly ... the production of animals of desirable appearance for sacrificial purposes’. That said, the Romans believed that cattle had been of much greater importance in the distant past. Columella noted that in earlier times ‘so great was the respect it [the ox] held among the ancients that it was equally a capital crime to have killed an ox and to have killed a fellow citizen’ (VI preface 7). Furthermore, he implies that not only were cattle more important but that they also formed the basis of the value system, perhaps comparable with early medieval Ireland but without the emphasis on milk. In his work on husbandry he states ‘that the names for money (*pecunia*) and private property (*peculium*) seem to have been derived from the word for cattle (*pecus*)

(VI, preface 3), thus implying such a role. This is derived from the Indo-European root-word *péku* which underwent the semantic transition from livestock to movable wealth, and to wealth in general (Mallory & Adams 1997, 23). The fact that cattle raiding is frequently recorded among the gods in the Greek heroic tradition myths would seem to confirm the early role of cattle as a basis of wealth (Walcot, 1997).

The use of dairy food was much more restricted in the Classical world than in early medieval Ireland. Fresh milk was little consumed (Curtis 2001, 399) and, since olive oil had many of the properties of butter, the latter was used primarily for medical purposes or as a cleaning agent rather than as a food (ibid. 400). Cheese was popular but in general one gets the impression that dairy produce was not regarded as a high-status food. It is an almost universal ingredient in the recipes for the meals of lowly estate workers recorded by Cato in his *De re rustica* ('On agriculture') (74–86). Dairy produce, however, is virtually absent from the recipes of Apicius (late 4th or early 5th century AD), *De re coquinaria* (Flower & Rosenbaum 1958), food that was (it is believed) confined to the tables of the wealthy. It is possible, however, that lactose intolerance was a contributory factor to the low adult rate of fresh milk consumption in the Mediterranean world and beyond.

In early Mesopotamia it can also be suggested that, at some stage earlier than the development of writing, livestock may have formed the basis of the value system. In texts dating to c.2000 BC the term *máš* can be used for 'rent' or 'interest', depending on the context (Steinkeller 1981, 120–21). It was payable in the form of shekels of silver. The term *máš*, however, literally means goat which suggests that at some earlier time the value system was based on livestock (ibid. 131). In Mesopotamia the value system was based on a silver weight standard (shekel) although coinage did not develop until the middle of the first millennium BC (Snell 1995, 1491). The shekel was essentially a grain equivalent. Babylonian law, dating to about 2200 BC, dealing with loans and interest, indicates that a debtor had a legal right to repay a loan in either money (silver) or actual grain, thus indicating that both were interchangeable (Driver & Miles 1952, 174). Wages, for instance, were invariably paid in the form of grain in early Mesopotamia (Nemet-Nejat 1998, 264), one shekel being equal to 180 grains (Driver and Miles loc. cit.).

The use of dairy foods was again much more restricted in early Mesopotamia than in Ireland. Fresh milk was rarely drunk but soured milk was processed into

butter and cheese. Butter took the form of ghee while the cheese was a rennetless form made of dried buttermilk (Stol 1993).

It seems that in the distant past both Mesopotamia and Rome had a value system based on livestock. Rome had moved to a coinage based economy while the Sumerians were in an intermediate stage where the value system was based both on silver and grain. Ireland in the seventh and eighth centuries AD, however, was still anchored in a value system where cows were the standard of wealth.

#### VEDIC INDIA

There is only one other well-documented early society where milch cows and dairying played a central role in social institutions to a degree comparable to early medieval Ireland. Cattle herding formed the basis of the economy in Indian Vedic society, cows being of special religious importance (Lincoln 1981). The central role of the cow in Vedic India is reflected in contemporary Hindu belief according to which the cow is sacred. The belief that cows should not be harmed or killed is, however, a relatively recent development, dating probably to the first few centuries AD (Simoons 1994, 108). Prior to that, cow sacrifice formed an inherent part in Indo-Iranian religious practices. Dairy products, too, were of central importance because libations of ghee, a clarified butter, were an essential component of the main Vedic rituals. The cow played a pivotal role in the belief system because of its association with the fire-god Agni, the most frequently mentioned of the gods. The *Śatapatha-Brāhmaṇa*, a book of Vedic rituals dating to the middle of the first millennium BC, describes how the cow and milk assumed such a central role in Vedic religious beliefs: 'Agni [the god of fire] coveted her: "May I pair with her", he thought. He unites with her, and his seed becomes the milk of hers: hence while the cow is raw, that milk in her is cooked warm; for it is Agni's seed ... it is ever white and shining like fire, it being Agni's seed. Hence it is warm when first milked, for it is Agni's seed' (Eggeling 1882, 326). The use of ghee as the principal libation in Vedic ceremonies was as a representation of the 'fire' or 'seed' of Agni. Unsurprisingly, dairy produce was also a very important source of food: the *Śatapatha-Brāhmaṇa* noting that 'from the cow (comes) fresh milk, from her boiled milk, from her cream, from her sour curds, from her sour cream, from her curdled milk, from her butter, from her ghee, from her clotted curds, from her whey' (Eggeling 1885, 69).

Given the religious importance of the cow and dairy produce it is unsurprising that cattle herding became central to the economy of Vedic society, i.e. the

society reflected in the earliest texts dating to c.1000 BC. Leadership and power in this society lay in the 'ability to protect not only the herd, since cattle are the chief form of wealth, but also one's clan, and to defend the claim of ownership of cattle and control over the grazing ground' (Tarpar 1984, 24). There are clear parallels with early medieval Irish society. To increase one's wealth one had to increase one's herd, usually through cattle raiding, and in turn this necessitated access to increased grazing land (ibid. 24–25). In the warrior tales of the *R̥g Veda* the main objective of warfare was to acquire cows. Cows seized in cattle raiding were regarded as gifts of the gods (Lincoln 1981, 101). Indeed, the Vedic term for a hero, *gojit*, means 'winner of cows' (Thapar 1984, 24). In Vedic society the successful cattle raiding leader (*rājā*) was obliged to give a substantial part of his booty to the priestly families because 'their rituals ensured success in battle and they were the bestowers of praise and therefore immortality to the hero' (ibid. 26). The power of the nobles essentially had to be legitimised by the priesthood who in turn demanded large numbers of cows both for wealth accumulation and for sacrifice so that this legitimacy was granted. At Vedic religious ceremonies cows were sacrificed, consumed, and gifted (Thapar 2002, 129). Economic surplus was used for gift-giving or was destroyed by burning as ritual sacrifice (Tarpar 1984, 65). In many ways this was economically comparable to the cattle consumed during the legally enforced hospitality (*cóe*) of early medieval Ireland (O'Sullivan 2004, 49–55) and the mandatory gifting / investment of cows within the institution of clientship (Mac Niocaill 1981).

#### COWS, SETTLEMENT AND THE LIVESTOCK ECONOMY IN IRELAND

Because of the animals' unusual status it is not surprising that cattle raiding was ceaseless in early medieval Ireland (Lucas 1989, 125–99). When wealth is based on cows it becomes necessary to find a way of protecting them against such raids and McCormick (1995) has argued elsewhere that ringforts, with their characteristic bank and ditch, were primarily to protect cattle. In times of danger cattle could be brought into the ringfort for protection. The insect remains from waterlogged deposits in a ringfort at Deer Park Farms, Co Antrim, confirm the keeping of cattle and other livestock inside ringforts (Kenward & Allison 1994). The documentary sources also indicate that livestock were regularly kept within these enclosures (Kelly 1997, 364). Both houses and farmyard were contained within the enclosure. In many ways, the ringfort combined the function of both the 'motte' and 'bailey' elements of the later Anglo-Norman structures, affording

protection for both the inhabitants and the livestock of a settlement. There are some 40–50,000 known ringforts in Ireland (Stout 1997, 53). Their substantial protective banks and ditches have ensured their high visibility to the present day. Protected scattered farmsteads of this type do not occur anywhere else in contemporary western Europe and they are a unique response to the value system of Ireland. They are in direct contrast to the unprotected farmsteads of contemporary England.

The fact that cows played a pivotal economic and social function over and above their role as providers of food has led to a remarkable uniformity in the faunal assemblages from archaeological sites of the sixth to eighth centuries (McCormick & Murray 2007, fig 5.1). The assemblages are invariably dominated by cattle, followed by pig and lastly by sheep. These sites are roughly contemporary with the core law tracts. In the law tract *Críth gablach* the numerical make up of the herd of a strong farmer (*bóaire*) is set out (Binchy 1941, 6–10 §§13–18; MacNeill 1923, 291). Cattle should be the most numerous, followed by pigs and then by sheep.

This uniformity can best be interpreted as being a consequence of the existence of a countrywide livestock economy reflecting the importance of the cow and dairying. This contrasts with the variety in the assemblages in earlier Iron Age sites in Ireland (McCormick 2007, 95–96) where sites such as Tara and Navan Fort have provided significantly different faunal assemblages.

The documentary sources dating from later than the seventh and eighth centuries, legal and otherwise, tend to reflect a livestock economy with its related value system similar to that in the core early law texts. These sources, however, are much less explicit on the mechanics of the social and economic structure of these later periods. The twelfth-century *Vision of Mac Conglinne* is particularly useful in listing the range of dairy products consumed but does not tell us whether or not the cow is still the basis of the value system. The importance of cows in Ireland is continually noticed until the end of the high medieval period, long after the Anglo-Normans had settled in Ireland (Lucas 1989). The Elizabethan William Camden (or rather his informant) was still able to observe of the Irish in 1586 that ‘cows are their chief and greatest wealth’ (Camden 1806, iv 469). The general impression is that the value system based on cows survived for a considerable period of time. Was this really the case?

Faunal assemblages from the later centuries of the early medieval period indicate that the country-wide livestock economy was beginning to fragment (McCormick & Murray 2007, fig 5:3). The livestock distributions from the later

sites are much more varied and cattle no longer retain their universal dominance. It seems more likely that the livestock economies are now dictated more by local economic or environmental factors than by social demands. Dairying undoubtedly continued to be of great importance in the diet of the Irish, but cows and milk do not appear to retain their former central role any longer.

The faunal remains suggest a major value shift sometime from the late seventh and early eighth centuries onwards. This is not reflected with any clarity in the documentary sources but it can be demonstrated in the archaeological record. Significant change in the form and use of the ringfort begins from the late eighth century onwards, change that can now be understood in the light of the faunal evidence. Ringforts can take many forms, the simplest and most common being a circular area surrounded by a bank and a ditch (Edwards 1990, 12–15). The soil from the ditch is used exclusively for the construction of the bank and the enclosed interior retains the natural soil surface. This type, which will be referred to as the ‘flat’ ringfort, was eminently suitable for the protection of livestock and could contain both housing and the farmyard.

A second type of ringfort is a type known as a platform or raised ringfort. Here, there is no encircling bank. The fill of the ditch, if present, was used to create a raised flat circular platform. In most instances, however, it would have been necessary to import additional soil for the creation of the platform. The primary aim of this type of site was to provide an elevated setting for the dwellings, not a defended farmyard where cattle could be protected from cattle raiding. In many instances, the earlier ‘flat’ ringfort type is replaced by the platform/raised type. The platform often involves a series of settlement phases, each new one created by the additional importation of soil and the raising of the platform. Some, such as Rathmullan, Co. Down (Lynn 1982) finally achieve the shape of a motte. The gradual increase in height of the platform could occur over several centuries. The evolution of the ‘flat’ bank and ditch type ringfort to platform ringfort can be seen at Langford Lodge, Co Antrim (Waterman 1963), Gransha, Co Down (Lynn 1985) and Deer Park Farms, Co. Antrim (Hamlin & Lynn 1988). At all these sites the defensive bank and ditches are buried by the subsequent raising of the mound. Ringfort distribution analysis in counties Down and Fermanagh has shown that the raised rath tend to show a preference for arable areas (Kerr & McCormick 2004; Robinson 2000). This preference can most clearly be shown in a distribution map by Kerr (2007, fig 8.7) which is based on Civil Survey land use information in the Clogher area, Co Tyrone. The raised/platform ringforts are all on, or adjacent to, the best agricultural land.



This change of settlement form can best be understood in terms of a move away from a value system based on cows. The best evidence presently available for dating the change from the flat to the raised ringfort is at Deer Park Farms, Co Antrim. This settlement began as a typical 'flat' ringfort dating to the late seventh/early eighth century. Bayesian modelling of a several radiocarbon dates indicate that it was transformed into a raised rath in the middle of the eighth century 'by AD 760 at the latest' (McDowell & McCormac forthcoming). The waterlogged earlier phase of Deer Park Farms produced a faunal distribution that conformed to the cow/dairying value system but unfortunately the acidic soils of the raised ringfort phase did not preserve animal bone. Moynagh crannog, Co Meath, however, provided faunal assemblages of a seventh/early eighth-century date (phase D) and a stratigraphically later sample of late eighth-century date (phase A1). The data show that the livestock economy had greatly changed by the late eighth century (McCormick & Murray 2007, fig 5.1 and 5.3): the dominance of cattle giving way to the dominance of sheep. This can be interpreted as the beginnings of the abandonment of a value system based on cows. Knowth, Co. Meath, provided assemblages from both the seventh to eighth centuries and the tenth to eleventh centuries. The latter period was marked by a decline in the role of cattle and a rise in that of pig, again reflecting this change (ibid. 106–07).

#### INDIA AND IRELAND: ECONOMIC CHANGE AND THE DECLINE IN THE IMPORTANCE OF CATTLE

In India there is evidence for a decline in the economic importance of cows from about 500 BC and the reasons for this have clear parallels with Ireland. Thapar (2002, 129) could have been speaking as easily of early medieval Ireland as of early India when she states these Vedic institutions 'prevented the *rājā* [king] from accumulating wealth to the point where his status was based on economic power rather than ritual sanction. Yet the former was necessary to create the type of kingship associated with the notion of state in which kings controlled the accumulation and distribution of wealth'. As in Ireland economic development was not possible without abandoning the value system based primarily on cows and dairy produce. Thapar (1984, 73) notes that by about 500 BC, when states and cities begin to develop, that Indian texts 'describe rice and its varieties with as much detail as the *Rg Vedic* hymns refer to cows'. The nobles had at this stage broken away from the system where their wealth and status was primarily dependent on cow ownership and sacrifice.

Thapar (1984, 26) notes that pastoralism in the early R̥g Vedic period did not exclude arable farming but ‘the balance between the two gradually shifted in favour of agriculture [arable]’ by the late Vedic period of about 500 BC. Cattle raiding continued but it had lost its primary role in the accumulation of wealth. The cow remained of central importance in the religious aspect of people’s lives but its economic importance had declined. It seems likely that a similar decline was occurring in Ireland from the late eighth century AD onwards.

In late Vedic India, the limitation in wealth accumulation based on livestock was overcome by turning to arable produce as the foundation of the farming economy. It is a much more efficient use of land for food production; it easily allows the accumulation of surpluses; and, additionally, it constitutes one of the basic commodities of trade (table 1). It can provide the necessary wealth that will allow independent polities to emerge into a more centralised form of power.

	<i>Energy Yield</i> <i>Mcal/Hectare</i>	<i>Protein Yield</i> <i>Kg/Hectare</i>
Beef Cattle	750	27
Dairy Cattle	2,500	115
Wheat	14,000	350

Table 1. Food output from different land uses (after Holmes quoted in Legge 1981, 89).

The reasons for the decline of cattle and cows as the principal measure of wealth are likely to have been the same both in early India and Ireland. Snell (1995, 1487) has noted that in early societies a currency had four functions: firstly as a standard of value, secondly as a medium of exchange, thirdly as a means of payment, and finally as a means of accumulating wealth. In Ireland, the cow functioned as a currency (Kelly 1997, 587) and satisfied all these functions to at least some extent. The early texts provide extensive evidence of cows being used for exchange and as a general means of payment. Cattle, however, are singularly ineffective as a means of accumulating wealth in the form of a surplus. One could only increase wealth by acquiring cows as long as adequate grazing land is available. The accumulation of surplus was critically linked to something that was generally finite, i.e. available grazing land, a flaw that was made worse by the fact that the early Irish did not save hay (Kelly 1997, 47). What were kings or the nobility to do after the carrying capacity of their lands had been reached and further meaningful gift-giving and redistribution became impossible? They

could perhaps increase their prestige by destroying and consuming cattle through the mechanism of feasting and hospitality, but this would not necessarily increase long-term independent economic wealth and power. Kelly (1997, 57) quotes an incident in AD 1536 that starkly illustrates this basic flaw in cattle as currency. One of the leaders of the Ó Domhnaill dynasty was so successful in accumulating cattle by raiding his political adversaries that their value as a currency was largely lost: it was recorded two bullocks could be bought for as little as a single groat in his camp. The perishable nature of meat and dairy products further detracted from the potential of cattle as currency: the opportunity for profitable long-distance trade in these products was limited. Essentially, there was little potential for being able to accumulate a surplus if one has cattle as one's principal currency.

#### AGRICULTURAL AND SETTLEMENT CHANGE IN IRELAND

There is clear evidence for economic change in Ireland from the late eighth century onwards. In the first instance, there is the change in the livestock economy, already discussed. Secondly, there is evidence for the expansion of cereal production during the late seventh and early eighth century. Unfortunately, pollen analysis cannot always reliably differentiate between grasses and cereals. However, the sudden increase in the building of horizontal mills during the late eighth and early ninth centuries (McCormick & Murray 2007, fig 5.7) can only be interpreted as an expansion in grain production and, as pollen analysis does not always show widespread evidence of forest clearance at this time, one must assume that land formerly used as grassland/pasturage was converted to arable farming. Expansion in the number of horizontal mills represents a change in grain processing from a domestic to a semi-industrial scale.

Intrinsically linked with the change in farming practice is a significant shift in the pattern and type of human settlement. Radiocarbon analysis shows that flat ringforts were generally constructed between the seventh and the early ninth centuries AD although many continued to be occupied after this, or re-used at a later stage (Kerr 2007, 86–100). From slightly before AD 800, as evidenced at Deer Park Farms, Co Antrim, raised raths begin to develop and continue to be built into the tenth century as Big Glebe, Co Londonderry demonstrated (Hamlin & Lynn 1988, 43). Rathmullen, Co Down, shows continuous occupation from the seventh/eighth centuries until Anglo-Norman times (Lynn 1982). Where 'flat' ringforts continue in use there is often evidence that their original

defensive function has become obsolete. Thus at Knowth, houses and souterrains were built across the infilled ditches of the earlier enclosed settlement (Eogan in press). Unenclosed settlements also develop and they are often characterised by the presence of a souterrain. Clinton (2001, 45) estimates that 65–75% of the souterrains in Co Meath are located in unenclosed settlements. Where souterrains are located within ringforts, and when the archaeological deposits allow the identification of chronological succession, it is generally shown that the souterrains are a secondary feature. This is most easily observable at the raised ringforts at Rathmullen, Co Down (Lynn 1982) and Deer Park Farms, Co Antrim (Hamlin & Lynn 1988, 47); souterrains are not present in the primary pre-800 phases but are present at later levels. At Shane's Castle, Co Antrim (Warhurst 1971, 61) the souterrain cut through the primary bank revetment wall while at Millickstown, Co Louth, the souterrains were shown to post-date the ringfort phase of the site (Manning, 1986, 193). Ó Riordáin & Hartnett (1943, 41) argued that the souterrain at Ballycatteen, Co. Cork was a secondary feature of the site. So does Cotter (1999, 65) in the case of Cahercommaun, Co Clare. At both Togerstown, Co Westmeath, and Kintale, Co Meath, the souterrains were built after the ringfort ditches had become obsolete (Clinton 2001, 203). In a small number of ringforts the souterrain appears to be a primary feature, for example Souterrain B at Marshes Upper 3, Co Louth (Gowen 1992, 71), but in general they are a secondary feature. The generally late date for souterrains is further supported by their almost universal association with rectangular houses, a house type that only developed after 800 AD (Lynn 1994, 85).

#### CONCLUSIONS

The sixth, seventh and eighth centuries are characterised by the construction of 'flat' type ringforts built for the protection of humans and cattle. From the late eighth century onwards settlement begins to be characterised by raised raths and souterrains both of which were built principally for the protection of people. Parallel to this is an expansion in grain processing, reflected primarily in the expansion of horizontal mill construction. Clinton (2001, 206) tentatively suggests that this expansion in grain production at this time would have led to an increase in population which in turn might have led to the development of commercial slavery. The need to protect slaves, or freemen from being taken and enslaved, might contribute to the development of the souterrain. There is much to recommend these suggestions. Ó Cróinín (1995, 269) has noted that a 'slave

economy' was alien to the Irish of the period reflected in the law tracts. Slavery existed but was confined to the domestic world and the economic importance of slavery is likely to have been rather limited. There is no unequivocal reference to a souterrain in the law tracts (Kelly 1997, 367). Slaves, however, became a commercial commodity during the Viking period. Acquired usually through raiding, they are an important aspect of Viking trade with the Irish which included the sale of prisoners taken in war in the Dublin market (Holm 1986). It seems likely that the construction of souterrains is a reaction to this commercialisation of slavery.

Cereal production is a more intensive form of agriculture than cattle rearing, and required a much higher input of physical labour. It is, therefore, quite likely that the expansion of arable farming from the late ninth century onwards was accompanied by an increase in the use of slave labour by the Irish. The inevitable increase in the 'value' of the human work force, coupled with a change of practice in farming would have served only to emphasise the decline in the relative value of cattle. Finally, it could be argued that the emergence of great provincial powers from the ninth century onwards was enabled by the change from an economically inert farming regime focused on cattle rearing and milk production to one that allowed the accumulation of significant surplus and the development of independent economic power.

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