

THE NEOLITHIC AND EARLY BRONZE AGE

IN THE FIRTH OF CLYDE

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VOLUME I

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In memory of my mother, and of my  
father - John Gervase Riddell M.A.,D.D.,  
one time Professor of Divinity,  
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## SUMMARY

This thesis is a study of the record of the monuments of the Firth of Clyde region in the Neolithic and early Bronze Age. Six type monuments which were the foci of ritual and/or burial practices during this period are considered: chambered cairns of the Neolithic, stone circles, standing stones, cup-marked rocks, early Bronze Age burial cairns and unmarked burial monuments. A difference from previous work is the historical perspective of the research. This marks a departure from traditional period-based studies, while investigation at a regional level avoids the restrictions of more localised research. The monuments are placed as far as possible in the context of the social relations and routines of everyday life in which they played a part, and transformations which took place are identified in a synthesis of the monument record through time.

A catalogue of sites is provided. This was compiled in a form suitable for computer analysis, and a package of computer programmes prepared with specific purposes in view. Quantitative analyses of the frequency of occurrence, spatial distribution and relationship to eight locational factors are carried out for each of the type monuments at the regional level and for sub-regions identified within the study area. The results are discussed in the light of a systematic study of the effects on the formation of the archaeological record of social and economic development in the area of study over the last two hundred years, and in relation to the findings from reviews which are undertaken of the evidence of Mesolithic activity, of settlement and cultural evidence and of environmental studies. Additional insights are gained from considering the architectural form of the monuments in relation to meaning and

function.

One aspect of the study thus concerns the observation of changes in the relationships between the living and the past, or between the living and the dead, from the spatial location and topographical positioning of monuments, while another concerns the ways in which these are reflected in the architectural form and function of the monuments.

It is found that the spatial division of the region in the Neolithic indicates that the chambered cairns do not reflect the full extent of settlement and farming, and that their occurrence, as occasional foci in the landscape, is closely related to land use traditions established in the Mesolithic. With the transition to the Bronze Age a different spatial division is seen to emerge in which stone circles are located in a small number of particular locations, whereas the burial cairns and unmarked burials occur throughout the region, and appear to be much more closely related to areas of settlement than were chambered cairns. Standing stones are known in association with both ceremonial and burial monuments, and their distribution also suggests areas of settlement. Many aspects of cup-marked rocks remain enigmatic, but they seem to represent ritual activity of a different kind, which may have taken place mainly in areas marginal to the main foci of other activities.

The island of Arran is found to have played a distinctive role within the region. This cautions against regarding Arran as a typical example of monumentality on the Atlantic seaboard of Europe. Traditions and practices were established in the Mesolithic which were seen to have contributed to this development. In addition it is likely that its physical prominence made it a natural reference point for the region, which through its central location was focal to maritime communications.

## PREFACE

Data collection for this research project involved study of the archaeological record for the area of study, museum visits, work in the field and original map research. Searches were made of the Ordnance Survey records and other records held in the National Monuments Record. In addition a search was made of relevant publications. Museums visited included the National Museum of Antiquities of Scotland, Edinburgh, the Hunterian Museum, the University of Glasgow, the Glasgow Art Gallery and Museum, the Buteshire Natural History Museum, Rothesay, the Campbeltown Museum and the Isle of Arran Museum and Heritage Centre, Brodick. Museum records were consulted as necessary. Site visits were made extensively throughout the area of study, and observations recorded in the field. A further major component of the data collection was map research in connection with establishing site location factors and other data required for quantitative analysis.

It should be noted that site numbers quoted in the text refer to the numbering of sites in the Catalogue of Sites, Appendix 1.



## CHAPTER '1

### INTRODUCTION

#### 1.1 Field of Enquiry

This study is of the region in and around the Firth of Clyde, south-west Scotland (fig. 1.1), as described in chapter 2, in the period from the earliest indications of farming within the first half of the fourth millennium bc, around the middle of the fifth millennium BC (Robinson 1981), through the Neolithic and into the early Bronze Age of the second millennium bc, whose traditions are likely to have lasted into the Bedd Branwen period (Burgess 1980), which ended c. 1250 bc (c. 1550 BC). The aim is thus to study this region through time, and through a period in which the archaeological record suggests changes in the form and location of monuments with concomitant changes in artefacts, including the first introduction of metals.

The archaeology of south-west Scotland was described by Scott (1966), whose work remains a valuable regional survey. Since that time the importance of studies at regional level has increasingly been recognised in view of the inter-regional diversity which has become apparent. The results of a number of lines of recent research which were not available to Scott will contribute to this study. These come from both excavation and other investigations, including environmental research. Major palaeobotanical studies have been undertaken in Ayrshire (Turner 1965, 1970, 1975) and on Arran (Robinson 1981), and one important element of this research project has been the collation of the available

pollen analytical studies relevant to the area of study, and assessment of the potential of this evidence as an index of prehistoric activity. Here a recent discussion of problems of interpretation of such evidence in Scotland (Edwards and Ralston 1984) has been useful. For the Neolithic period the extent and level of activity suggested for different parts of the area of study from the palaeobotanical evidence has been compared with what is indicated from the distribution of polished stone axeheads. These topics are discussed in chapter 6.

A major part of the new work undertaken in this thesis is the determination, through quantitative analysis, of the extent to which a range of location factors influenced the occurrence of Neolithic and early Bronze Age sites in the area of study, and, in particular, the location of six different types of Neolithic and early Bronze Age monuments. This analysis is described, and the results presented, in chapter 5. The interpretation of the results forms a major part of the discussion of the monument record of the area of study through time which is the main theme of the thesis and the subject of chapter 8. The preparation and handling of the data files, which appear in this thesis as Appendix 1 and Appendix 2, are described in chapter 4, and in the Notes which accompany these Appendices.

An important area of investigation which has received little attention in previous work is the formation of the archaeological record. By this is meant, throughout this thesis, study of the ways in which the present archaeological record has been affected by recent social and economic development. A systematic study of the formation of the archaeological record in relation to the social and economic development of the region over the last two hundred years has been undertaken in



chapter 3, and will be used to assist interpretation of patterning of monuments and artefacts. A background study of the artefact evidence for both the Neolithic and early Bronze Age in the area of study is given in chapter 7.

A further and important reason for undertaking this study is that the evidence has not been reconsidered in the light of the new approaches developed in recent years by Renfrew and others to the understanding of past societies and their change through time. In the remaining sections of this chapter areas of Renfrew's work which are relevant will be considered and other approaches discussed, with a view to clarifying further aims of the research.

## 1.2 Approaches to a Social Archaeology

### 1.2.1 Introduction

Major problems in approach to the interpretation of past societies emerged with the recognition that radiocarbon dating meant not only the loss of the established chronological framework for European prehistory but also called in question traditional explanations through origins, migration and diffusion for the appearance of cultural forms and their continuity or change.

For a time reaction was to disfavour 'social archaeology' (Hawkes 1954; Smith 1955) and concentrate rather on the study of subsistence and economy, aspects of past societies seen to be open to analysis from the archaeological record. 'Cultures' came to be considered in terms of ecological adaptation - bounded by environmental constraints and economic

considerations (Higgs 1972) - a position in which the environment was the ultimate determinant.

Renewed interest in understanding past societies in social terms was stimulated by the pioneering work of Renfrew. In developing new approaches to a series of archaeological problems he sought solutions of 'general, though not necessarily universal relevance' (Renfrew 1984, 5-6).

### 1.2.2 Understanding Change

Understanding change presented many problems for post-diffusionist thinking. A strong element in Renfrew's work on change has been a systems approach to archaeological evidence (Binford 1965; Clarke 1968). Systems thinking seems to offer a way of investigating social units of prehistory in their own right (cf. as 'cultures' in Childe's (1929, v-vi) sense. However its application is not without difficulties. Past social systems, unlike biological systems, cannot be isolated from outside influences. Artificial boundaries must therefore be created with the analysis in mind. Moreover the definition of sub-systems and the links seen between them will be governed by archaeologists' perceptions, and their relevance to the frames of reference of prehistoric societies cannot be checked. This problem is perhaps seen most acutely in the definition of separate 'social' and 'projective or symbolic' sub-systems (Renfrew 1972, 263) which contain the evidence concerning relationships between people and the expression of knowledge and belief about the world. Here a divide is created between material culture and meaningful action, preventing the possibility of seeing material remains as a manifestation of ideology and a key to its content (Hodder 1982a, Pader 1982, Tilley 1982). Perhaps the

most critical difficulty is that change must be gauged through 'windows' into the organisation of the system at different points in time. These may give indications that change has taken place - the system is transformed - but the reasons for change or continuity remain unclear. Explanations rest on stimulus and adaptive response and suggest general laws which are behavioural and processes of integration within societies in which man seems to maintain a passive role.

An important feature of Structuralist-Marxist approaches (e.g. Rowlands 1980; Tilley 1981) is the recognition that society is rarely integrated in this way. The focus, on ways in which tensions, competition and conflicts within society are expressed, allows a more dynamic analysis in terms of human interaction. A key concept is the way in which contradictions within society - such as those between old and young, male and female, the individual and the group, between the forces and relations of production or between past concepts and present ideals - are expressed through transformations and distortions. Evidence of these may become incorporated in the archaeological record, in that material culture has a role in representing ideas. Material remains are seen to carry particular meanings specific to the society observed. These may have some correspondence with general principles noted elsewhere, but a passive role for material culture as a direct reflection of social systems, trade networks and so forth is rejected (cf. Hodder 1982a). Such an approach can provide insights into ideological change. For example, observation of the material culture of the Neolithic and Early Bronze Age has suggested a change from a world view built around the community and the ancestors, in which the place of the individual is repressed, to one in which the power of individuals is made legitimate or openly acknowledged (Shennan 1982).



However it is the realignments which have taken place that are revealed, whereas the continuous reproduction of the social system as individuals act to maintain or transform social institutions (Giddens 1979) remains difficult to reach (cf. Barrett forthcoming).

### 1.2.3 The Nature of the Evidence

The archaeological record for the Neolithic and Early Bronze Age in the Firth of Clyde, as elsewhere in the British Isles, consists predominantly of ritual and burial evidence, with very limited settlement evidence, as will be seen in chapter 6. We are concerned with the development of what appears to be an intense concern with burial and ritual, and the changes in the manifestation of this concern through time. The material evidence has thus resulted from meaningful actions of past societies (Huntington and Metcalf 1979, 1). Monuments are not random residues of past societies, but expressions of values and the world view of their builders. Forms of burial incorporate the reaction of communities to death and the renegotiation of relationships which follows, and through which its impact is resolved. Pader (1982) has emphasised the importance of attention to the recursive nature of ritual activity. There is a stress on unity, continuity and timelessness, for rituals offer a particular opportunity to encapsulate the past within the present and project it into the future, thus playing a significant part in crystallising the 'dominant reading' of shared discursive knowledge (Barrett 1987a and forthcoming). At the same time the uncertainties implicit in liminal situations and the transformations they effect may allow re-interpretation and thus initiate change (Turner 1967). Ritual is

thus a medium sensitive to shifts in the concerted views of society. As Pader notes (1982, 42) a historical perspective in terms of 'what came before and comes after' may be the only viable avenue to study of burial and ritual evidence in the absence of the total social context (cf. Ucko 1969).

Previous work in the Firth of Clyde has been in general period-based. As has been mentioned, a major aim of the present work is to study the region through time, and to offer an interpretation which includes a historical perspective of this kind.

#### 1.2.4 Megalithic Cairns and Neolithic Society

For the Neolithic period the cultural evidence comes mainly from the chambered cairns. These belong in general to the group of nearly one hundred monuments defined as the 'Clyde' cairns, which occur widely scattered in the southern part of the western seaboard of Scotland from the Solway Firth to Glen Etive. However the 'heartland' of their distribution lies within the area of study in the Firth of Clyde, and it is on Arran that their salient features are most evident (Henshall 1972, 19). For Childe the marked differences in the distribution of the chambered cairns within the Firth of Clyde could be explained in terms of avoidance by colonist farmers of the heavier soils and thick forests of mainland areas of Renfrewshire and Ayrshire, and a preference for settling in the vicinity of pockets of easily worked land on the islands and on the Kintyre peninsula. This was seen to be in keeping with the seaward orientation of the Firth of Clyde, open in the south to western sea-ways (Childe 1934 cf. Davies 1946). The location of cairns in the vicinity of

land with agricultural potential has continued to be a strong theme in the work of Scott on the 'Clyde' cairns (1969a), and has been reinforced for the cairns of Arran by the well known study by Renfrew (1973a, 1976) and a more recent study by Perry (1984) (Perry and Davidson 1987).

The main thrust of studies of the cairns has been towards defining an evolutionary typology through seriation. In recent work (Scott 1969a, 1973a, Henshall 1972) a typological framework from simple to complex has been correlated with other evidence to suggest a chronological sequence. The validity of this approach will be considered in chapter 8, and the typology reviewed in the light of new approaches prompted by structuralist thinking. Fleming (1972, 1973) has seen design of chambered cairns as related to the requirements of ritual, with segmentary chambers linked to fission and fusion in society. Kinnes (1976, 1981) has considered tomb plans as design modules, proposing that these and other architectural features, manipulated according to need and intent, may not necessarily follow an evolutionary typology.

In 1976 Renfrew offered an interpretation of the appearance of megalithic cairns in Atlantic Europe in terms of adaptations required of farming communities, the monuments being seen as territorial markers for egalitarian societies (cf. Renfrew 1981). This explanation stemmed from earlier work - the studies of the chambered cairns of Arran, mentioned above, and of Rousay in Orkney (1973a). In both cases the islands were treated as closed systems. The fairly regular spacing of the 18 cairns which Renfrew considered on Arran suggested that each cairn occupied a territory. Hypothetical territories were constructed using Thiessen polygons (fig. 1.2). While some consensus has emerged that megalithic cairns may carry some territorial significance (Darvill 1979; Chapman



1981), it has also been recognised that the importance of local diversity may be masked by the use of a generalised explanation. Perry's study (1984) (Perry and Davidson 1987), also limited to the island system, examined the extent to which thirteen factors influenced the location of cairns at three levels of analysis: island, cairn area and cairn site. Examining the wider region of the Firth of Clyde, of which Arran is a part, seems particularly important in view of the marked variation which is apparent in the distribution of chambered cairns. The variation in monumentality will be considered, in the light of the palaeobotanical evidence and the evidence of the distribution of stone axeheads mentioned above. The available settlement evidence will also be taken into account.

A more fundamental reason for such a review comes from the challenge to Renfrew's view of early farming societies as 'small communities, each autonomous and independent of its neighbours' (Renfrew et. al. 1976 201). The recent palaeobotanical work mentioned above (Robinson 1981, 1983) suggests that on Arran the introduction of farming may have taken place within an existing Mesolithic context, and recent scientific analysis by Thorpe and Thorpe (1984) has confirmed that movement of pitchstone from Arran is likely to have begun in the Mesolithic period. As we will see in chapter 6 the mainland of Ayrshire appears to have been the major focus of Mesolithic coastal activity in the Firth of Clyde (Morrison 1982), yet Ayrshire shows little evidence of Neolithic monuments. It has become important therefore to investigate the possible nature of a Mesolithic contribution to the emergence of the Neolithic. This will be considered in chapter 6. Both Chapman (1981) and Bradley (1984a, 15) have drawn attention to the interface between Mesolithic and Neolithic, pointing out that Meillassoux's valuable distinction (1972) between man-land

relationships of hunter-gatherer and agricultural societies is too rigid for prehistory in view of the evidence for social complexity, sedentism and food storage among Mesolithic groups (Harris 1977; Bender 1979, 1981; Rowley-Conwy 1981, 1983). If however continuity from Mesolithic to Neolithic is envisaged, the appearance of Neolithic monuments should be considered in relation to the restructuring of social relations which the move to sharing the agricultural year is likely to have entailed. An attempt will be made in chapter 8 to consider the distribution and siting of Neolithic cairns within the area of study from this point of view. This study will use historical and regional perspectives developed in chapter 6 as well as the results of the analysis of location factors in chapter 5, and insights from the study of the formation of the archaeological record in chapter 3. Aspects of the evidence of the cairns - structural elaboration, artefact and burial evidence - will also be considered in chapter 8. These may suggest manipulations through which contradictions within society were contained and reflect oppositions conceived in the ordering of the living world (Shanks and Tilley 1982) through a period in which growing awareness of lineage as power may have led to more competition among groups.

#### 1.2.5 Monuments - Lasting Impression

The appearance in the archaeological record for the Firth of Clyde of stone circles and settings, likely to have begun in the third millennium bc, suggests a major increase in the scale of communal undertakings. It is sometimes suggested that this is related to the emergence of powerful leading groups or individuals from ancestor-focussed



communities to dominate larger regions and command surplus labour and production. Renfrew's pioneering study of the Wessex region (1973b) is well known. Here the sequence of monuments was interpreted in terms of the development of social stratification, and their spatial organisation related to the distribution of power in society (cf. Renfrew 1977). More recently Cherry's examination of monumentality in early states (1978) has emphasised the links between ideology and monument building. Its application to our period is discussed by Bradley (1984a, 1984b, 1985). The suggestion that the appearance, nature and scale of monuments should be seen as intimately related to the circumstances which inspired them, and the collective world view which they affirm, allows us to move beyond using monument scale as an index of social complexity to develop insight into the process of monument building and the meanings monuments hold for society. One aspect of their role, unifying society at times of change, suggests that large or elaborate monuments may appear suddenly and dramatically, calling in question the gradual increase in monument scale which Renfrew assumed, and which is a feature of many traditional monument typologies.

The form of the new monuments does indeed suggest ideological change. Whereas chambered cairns appear to express the recourse of a local community to its dead, the large scale of these open-air monuments as well as their evident relationship to the natural landscape, and perhaps even the choice of sites with particular astronomical events in mind, point to a significance for the living as part of the natural ordering of the world. These changes will be investigated in chapter 8, where a study of ceremonial and ritual monuments - stone circles, standing stones and cup-marked rocks - will follow the study of Neolithic cairns. Again this

will be based on the analysis of location factors (chapter 5) as well as the distribution of the monuments within the area of study, and will take into account the findings concerning the formation of the archaeological record in chapter 3 and the regional perspectives of chapter 6.

An important aspect of monuments which is brought out by Bradley (1984b, 1985) is the lasting nature of their symbolic power - their permanence. This may extend beyond their original conception as adaptation, re-use, abandonment or destruction take place, and may also affect the positioning of new monuments in the landscape. It is hoped to capture something of the continuous process of construction and reconstruction of the monumental landscape which Bradley envisages by studying the evidence of monuments in the Firth of Clyde region through time. The significance of the chambered cairns is likely to have continued beyond their latest use and their eventual blocking. The positioning of later monuments - stone circles and settings, Bronze Age cairns and mounds - will be considered in relation to the continuing presence of the chambered cairns. It is thus hoped to avoid the separation of the evidence inherent in period-based studies. In the past this separation has been emphasised by the primacy given to artefacts and burials in traditional studies of Bronze Age material, and some shift of interest away from consideration of topographical aspects and the architectural character of the monuments. However these are likely to remain important areas of investigation of the relationship of the monuments to prehistoric activity and settlement. In this study therefore it is hoped to integrate artefact and burial evidence with monument or other context of deposition. To this end distribution maps of the later monuments and sites have been prepared, and will be considered in the final sections of chapter 8 along

with the results of analysis of the same range of location factors as was used for the earlier monuments. Insights concerning the archaeological record will again be relevant, as will the knowledge of settlement and environment which is available.

#### 1.2.6 The Emergence of Individual Power

A number of factors have been seen as instrumental to the development of ranking in society. The development of more intensive systems of production has been seen to lead to greater interdependence within society, as well as to opportunities for exploitation (Gilman 1981; Sherratt 1981; Renfrew 1982). Here the role of internal exchange, or redistribution, is likely to be important (Halstead and O'Shea 1982). Increased production may be associated with accumulation of wealth and prestige gained from consumption through the giving of feasts. We have already noted that hierarchy of monument may suggest a ranked society (Renfrew 1973b). From themes put forward for Neolithic Wessex, Renfrew developed the notion of 'polity' (1977), an organisational unit, which could be sought from the archaeological record, to determine the locations of central persons or groups. This work has been seminal to the concept of peer-polity interaction (Renfrew and Wagstaff 1981). Although developed from study of early state societies, the ideas have provided important insights into the role of exchange in the emergence of ranking, and the move towards acceptance of individual prestige and power in less complex societies. Both Rowlands (1980) and Shennan (1982) have stressed the development of separate spheres of exchange, for example ritual or elite as opposed to utilitarian, in the legitimation of power.



An ethnographic parallel for this process has been suggested from the Kula networks of the Trobriand Islanders (Leach and Leach 1983). One of the points illustrated is the different levels of communication which result. This is distinct in important ways from the 'dominant' model of exchange, trade or interaction (Renfrew 1982; Frankenstein and Rowlands 1978) in which the acquisition of prestige goods confirms the position of an emerging elite, but at the same time creates dependency and encourages imitation. The specialised relationships are between members of separate but independent groups or communities. Their autonomy is maintained, but through the process, described by Bradley (1984c, 7) as 'converging evolution' (cf. Bradley and Chapman 1984a,b), the exchange of goods and transmission of ideas allows opportunities for acquisition, mutual inspiration and emulation. The diversity of participating groups may continue while the ideological change towards the acknowledgement of individual power in society takes place. As access becomes restricted to key materials and artefacts, to craft skills and other special areas of knowledge, the separation of the leading groups from the rest of society, which was discussed above (1.2.5), is likely to be sealed and their authority secured. Through time the inequality may be more openly expressed in symbols of individual power and prestige which may be visible in the archaeological record.

Acquisition of particular special goods in this way may be suggested from the long-range networks of the Neolithic stone axe trade in Britain (Bradley 1984a; Clarke et. al. 1985). Another example may be Grooved Ware pottery whose specialised nature was discussed by MacKie (1977). This is supported by its distribution, which seems to cut across regional sequences and by its appearance in distinctive ritual contexts (Whittle

1981; Thorpe and Richards 1984). Unlike stone, whose source may be limited to a particular location, pottery may be copied by local potters, eventually losing its unique status. The relationship of the area of study to the Grooved Ware and Beaker networks will be considered in chapter 7.

Since the traditional view that Beaker pottery was brought to Britain by successive groups of immigrants, still put forward by Clarke (1970), has been largely rejected following the work of Lanting and Van der Waals (1972), two interpretations have been suggested. It has been proposed that Beakers, and their associated finds, comprised a fashion or cult package which was adopted within existing later Neolithic social settings (Burgess and Shennan 1976; Burgess 1980). A more dynamic interpretation has been developed by Thorpe and Richards (1984) in which the Beaker evidence is seen as indicative of an 'alternative' exclusive exchange network of prestige goods penetrating and challenging the established elite and its authority.

Closely allied with Beaker pottery in Britain, if not directly associated with it, is the appearance of metal artefacts. It seems likely that this may have presented various challenges to the existing power structure, which will be discussed in chapter 7. Some items, such as halberds, daggers, knives and ornaments seem especially designed for ceremony and the display of power. Although copper and bronze axes are prominent among the artefacts they may have been produced at first more for their value in gift exchange and as prestige possessions than for use as tools. It is with the coming of metal that two distinct and separate contexts for the deliberate deposition of wealth - grave and hoard - become clearly visible in the archaeological record. Both may constitute its removal from gift exchange or other circulation network. The



occurrence of these different contexts of deposition in the area of study will also be discussed in chapter 7.

Certainly it is from this point that symbols of individual power and prestige emerge very clearly in the burial record. Moreover variety appears to be a keynote. Different pottery styles appear in quick succession, and with overlaps in time. There is a range of associated artefacts both of British tradition and suggestive of exchange networks on a European scale. Burial mounds and cemetery settings encompass a number of mortuary practices. It seems from the evidence that a range of possibilities existed, offering choices, and the opportunities of creating distinctions in the treatment of individuals at death.

Although a number of valuable studies of later Neolithic and Early Bronze Age artefacts have been undertaken in the west of Scotland in recent years, these have for the most part been based on modern county divisions of mainland areas (Simpson 1965; Roe 1967; Morrison 1968; Ritchie 1970; Morrison 1978). An exception is the study of Beaker pottery by Ritchie and Shepherd (1973) which extends Ritchie's study of 1970 to cover Bute and Argyll. In chapter 7 these studies make a major contribution to the surveys of early Bronze Age pottery, metalwork and other artefacts in the area of study. In a time of ever-widening contacts and increasing interaction, a regional approach to artefact studies is appropriate, and likely to be instructive for an area of study located in a gateway position to the western sea-ways which offers routes to inland Scotland and the north (cf. Scott 1951). Some of the routes likely to have been important are discussed in chapter 2, in which physical features of the area of study are described. Relationships within the Firth of Clyde are also likely to have remained important, and the

artefact evidence may illuminate the record of early Bronze Age burial monuments discussed in chapter 8. While regional coherency seems to have continued in a strong Food Vessel tradition (Young 1951, cf. Pierpoint 1980, 87-90), changes are also suggested. In Ayrshire, apparently largely avoided by Neolithic monument builders, there seems to have been increased activity. There is also expansion of burial activity, for the first time on present knowledge, to some of the small off-shore islands within the Firth of Clyde. The presence of the complex of major monuments at Machrie Moor, Arran, their continuing use and the addition of new monuments in the vicinity suggest the ongoing need to examine the relationship of Arran to the rest of the Clyde area - the question of 'core' and 'periphery'.

### 1.3 Aims, Objectives and Methodology

In summary, the aim of this research is to study the monument record of the Firth of Clyde region of south west Scotland in the Neolithic and early Bronze Age, a period of time which transcends the traditional period boundaries. It is hoped to be able to integrate the full range of available evidence, and to use several methods and approaches, each designed to meet a particular objective.

A study of this kind, involving a large number of records, poses problems in the management and handling of data. Methods are developed appropriate to the research. It is intended that the data files prepared in this connection will remain available and be of a form which could be updated for use in future research. The computer programmes will also be available for further work, as will the results of the analysis.



The quantitative analysis of the frequency, spatial distribution and location of the six type monuments is intended to provide a basis, more rigorous than purely qualitative assessment, for the interpretation of the occurrence of the monuments in the area of study, and the extent to which their distribution and location may have been influenced by the range of location factors.

It is expected that, in a study of the occurrence of a range of monuments of different forms in a region with much topographical diversity as well as variation in recent social and economic development, the formation of the archaeological record will be important. Guidelines are established as a result of systematic investigation which will be used in this study, but which could also be applied in future research in the region. Apart from this application, the history of the archaeology of the Firth of Clyde region is a topic of local interest.

While a regional approach to the study of the monuments is expected to be important in itself, in view of the differences apparent in the monument record, it is hoped to go beyond an interpretation based only on this analysis, and to attempt to understand the frequency, spatial distribution and location of the monuments in the wider context of the activity, relationships and social structure of the region. It is with this aim in view that there is examination of the environmental evidence, study of the settlement record, and, for the Neolithic, assessment of activity as indicated by the occurrence of polished stone axeheads.

A major objective is to investigate the extent to which a historical perspective may reveal processes of change and development through time within the region in a way not possible in studies which focus on a single period or class of monument. In view of the continuities from Mesolithic

to Neolithic which are now suggested, the evidence for the Mesolithic is examined in order to determine whether patterns developed in that period may have contributed to the introduction of farming and the appearance of monuments in the Neolithic. A historical perspective is maintained throughout the study of the monument record by observing changes which take place, not only in the occurrence, spatial distribution and location of the monuments, but also transformations in their architectural form, in mortuary practices and in the provision for ritual and ceremony. With this objective in mind studies are undertaken of the form and function of each of the type monuments, as well as of burial evidence and associated artefacts.

These approaches have been adopted with the aim of illuminating processes at work within the region and examining how these may have altered through time. At the same time account is taken of influences from outside which are likely to have affected the region, and how these also may have changed.

While this is a study of one limited area Scotland, it is hoped that it will also be a contribution to the wider body of research into the Neolithic and early Bronze Age periods in the British Isles.



## CHAPTER 2

### AREA OF STUDY - PHYSICAL FEATURES

#### 2.1 Location and Extent

The position of the Firth of Clyde in south-west Scotland has already been shown (fig. 1.1), and it may be seen that the area of study (fig. 2.1) comprises the mainland and archipelago region of the lower Firth of Clyde. It extends over almost 4,500 square kilometres at the entrance to one of Scotland's major sea loch and river systems.

#### 2.2 Definition

A cohesive geographical unit has been chosen, bounded by natural features. In the west the area is enclosed, and the seas within the Firth sheltered, by the long narrow peninsula of Kintyre, the outermost edge of the Scottish mainland. To the north the close-set peninsulas of Cowal form a boundary. The hills which encircle the Ayrshire plain are at the eastern limit of the seaward facing mainland and island zone, dividing it from the more land- and river-oriented area of the inner Clyde estuary and river.

Nevertheless, stretching from the Highland zone in Cowal and Kintyre in the north and west to the fringe of the Southern Uplands at Ballantrae, Ayrshire in the south and east, the area has sufficient extent and variety to allow the archaeological evidence from the individual site or the smaller geographical unit - single island or modern county - to be

viewed within a regional context. In addition, as we have seen (1.2.4 and 1.2.6), the area forms a significant entity in terms of the archaeological evidence for the period under study, including the 'heartland' of the 'Clyde' cairns of the Neolithic period and distinctive local groupings among artefacts of both the Neolithic and the Early Bronze Age. On the other hand, it is by no means an area isolated from outside influences. Open in the south to the North Channel, it forms a gateway area at the mouth of the River Clyde, potentially a catchment zone for movements within the Irish Sea area and a likely staging post on routes to or from central Scotland, as well as to the north by sea lochs and short land crossings which offer sheltered routes. The peninsula of Kintyre extends towards Ireland, and from the Mull Ulster can be seen about twelve miles away, although separated by seas notorious for dangerous tides (Brackenbury 1981, 46). These factors, seen as important to the interpretation of the prehistory of the area in the diffusionist era (e.g. Childe 1935), remain relevant to current approaches which recognise that the particular development of a region is likely to be influenced by its network of interaction with both neighbouring and more distant places.

## 2.3 Landforms

### 2.3.1 Introduction

Within its natural boundaries, the area defined encapsulates much of the richness and variety of the wider Scottish landscape. That this variety is contained within one small region of Scotland is due essentially to the complexity of its geological history, but the effects

of glaciation and other agencies active during relatively recent times have also been of great importance in creating the landforms and determining soil formation.

The position of the area in relation to the two major fault lines which dominate the geology of Scotland is shown in fig. 2.2 a. In the north and west the area is cut by the Highland Boundary Fault, while the Southern Upland Fault forms a boundary in the south-east. There are thus included elements of the three main physiographic and tectonic divisions of Scotland: Highland and Island, Midland Valley and Southern Upland. These divisions will have been important to perception and use of the land from the time of man's first activity and settlement. They are clearly reflected still in the varied pattern of land use with which we are familiar today, and have contributed to shaping the recent social and economic development which is discussed in chapter 3. In sections 2.3.2-2.3.4 below the physical features of the area of study are described as they appear at the present time. Climate is discussed in section 2.3.5. Aspects of the environment likely to have been different in prehistory are considered in the following section (2.4), which will be relevant throughout the text. The following sources have been used: Bown et al. 1982; Brackenbury 1981; Crofts and Ritchie 1972; Hughes 1954; Ritchie 1974; Steers 1973; Whittow 1977. Figures 2.2-2.6 show the solid and drift geology, relief and drainage, present soils, present land use and climate of the area and are relevant throughout this chapter.

### 2.3.2 Highland and Island

Much of the Kintyre and Cowal peninsulas, along with the northern



parts of the islands of Arran and Bute fall within this division, although in general the hills are smooth and rounded with only local irregular and rocky areas, and lack the grandeur of the high mountains of the true Highland zone further north. A dramatic exception is the intrusive mountain massif of north Arran, whose rugged peaks and jagged ridges form the highest and wildest part of the area of study and dominate the landscape of the region from all directions (plate 8). Elsewhere Dalradian schists and slates predominate, on which soil formation tends to be shallow, and till deposits remain closely associated with the parent rock types. Wet conditions have encouraged the accumulation of organic material, giving rise through time to widespread peat formation (2.4.4, 2.4.5), so that lowland basins and upland hollows have become areas of peat bog vegetation. Peaty gleys are typical of most of the lower slopes and foothills with peaty podzols occurring on the higher, steeper slopes, and the landscape today is dominated by rough grass and moorland, except where recent re-afforestation or hill-farming has been developed (3.6.1). Fertile land is thus now limited and localised. In parts of Kintyre between Glen Lussa and Campbeltown, outcrops of Loch Tay Limestone enrich the soil, and in west Kintyre and on Gigha pockets of fertile land occur in association with metamorphic limestones, the Greenbeds and Epidiorite schists. Such areas must always have been important for farming. The post-glacial raised beaches (plate 1), prominent around most of the coastline form terraces of easily cultivated, free-draining soils which are important for farming at the present time. They also offer a rim of flat or shelving land of maximum importance today for building and to carry roads, for with the hinterland rising steeply river valleys are short and offer few opportunities for inland routes. The formation of



the raised beaches is discussed below (2.4.2).

### 2.3.3 Midland Valley

The mainland areas of Ayrshire and Renfrewshire form the largest and most continuous stretch of country in this division, but it extends also to the southern end of Kintyre, parts of the islands of Arran and Bute as well as the Cumbraes.

The changes may be easily observed where Highland rocks give way abruptly to the softer Lowland Valley sediments. The clearest illustration within our area is on the island of Bute. In the north, as we have seen, the ground is hilly with moorland vegetation, and woodlands are confined to the coastal fringe. Improved land is restricted to the raised beach areas, notably between Kames and Ettrick Bays. However, south-east of the Highland line, which provides an easy route across the island from Rothesay by Loch Fad to Scalpsie Bay, a tract of cultivated fields and thick woodlands marks the area of fertile soils developed on the Carboniferous sandstones and the sandstones and conglomerates of Old Red Sandstone age. This extends almost to the south of the island. Near the coast, however, where basalts occur soils again become shallow and the rough moorland vegetation which replaces the fertile fields is given a rugged aspect by intrusive Tertiary sills. Rocks, crags and cliffs dominate the southern coast. This contrast is repeated in the Cumbraes. Great Cumbrae replicates conditions in the rich farmland of south-central Bute while moorland and rock are typical of the deserted islet of Little Cumbrae.

Perhaps the most distinctive example of landform resulting from

volcanic activity is the tiny isolated boss which forms the island of Ailsa Craig (plate 7). The grassy dome is only 1.6 kilometres wide. Yet it is set on towering columnar cliffs to form an unmistakable prominent landmark at the entrance to the Firth of Clyde.

Like the island of Bute, Arran is transected by the Highland Boundary Fault, but the complexity of its geology makes the boundary less clear. As we have seen, the north is dominated by mountains. South of the 'String Road' which follows the glens across the island from Brodick in the east to the west coast at Machrie Moor, rocky intrusions still dominate the central plateau, but lowland sediments appear around the coast. Further south the plateau is till-covered and the rolling moorland is dissected by the deep glens which carry the 'Ross' road from Lamlash on the east coast to Lagg in the south-west. On the moorland there are areas of recent re-afforestation. As the land falls towards the coast in the south and west calcareous gleys occur which are used for farming. Here, as on the east coast, farming land is around the bays and river mouths. The broad valley of Shiskine is unique, and the south-west of Arran is likely to have always had the most extensive farm land on the island. Headlands and cliffs around the southern coasts are formed from massive sills, as is Holy Island which shelters Lamlash Bay. Inland, fine-grained sills cross the natural drainage to form scarps and terraces on hillsides, and rivers are stepped with waterfalls. On the south coast numerous dykes run out across the rock shore-platforms. It is suggested later (6.2.2, 6.2.3, 8.2.4) that the extraordinary variety of rocks evident on Arran may have been important in attracting early exploration. The exploitation of pitchstone is now recognised to have begun within the Mesolithic period (Thorpe and Thorpe 1984). In a region like the Firth of Clyde, where

flint is limited to beach pebble material and sources of chert restricted (Wickham-Jones and Collins 1978), the occurrence of other stone supplies is likely to have been important.

In the Kintyre peninsula a wedge of lowland sediments occupies the rift valley of the Laggan between Campbeltown and Machrihanish (plate 5). Around Campbeltown there is fertile farming land on the Carboniferous limestone, but much of the central area is peat moss. The terraces of the Laggan are now protected in the west by coastal dunes heaped up to Hebridean dimensions behind the exposed sandy bay of Machrihanish. This lowland passage is likely to have been an important route across Kintyre from the earliest times. From here north to Loch Tarbert, although major glens occur as at Lussa and Carradale, crossing the peninsula involves ascent to the high plateau, and glens on the west coast, are short but steep.

Landscapes typical of the Midland Valley division can best be seen in the extensive mainland areas of Renfrewshire and Ayrshire. An arc of hills formed from resistant lavas, igneous intrusions and remnants of Old Red Sandstone forms the eastern boundary of the study area. It is broken in places by valleys carrying the headwaters of long rivers which run out across the expansive lowlands of central Ayrshire. These offer a number of routes: to the River Clyde by the Lugton Gap, to Lanarkshire and Nithsdale by the valleys of the River Irvine and the River Ayr and their tributaries, or southwards towards the Solway coast by Loch Doon. On the hills peaty gleys or podzols have developed giving rise to grassy moorland with areas of bog. The soils on the lowland glacial tills, however, are fine in texture, sandy clay loams or clays, in which internal drainage is slow. The non-calcareous gleys developed on the grey-brown till derived



from Carboniferous shales and the brown forest soils on the red-brown tills derived from Old Red Sandstone respond well to drainage, cultivation and the application of fertilisers. They have thus been much improved by modern farming. Grassland for dairying is prominent, but grain and root crops are also grown especially on the lighter loams over the Permian sandstone. With soils uniform over broad areas, there has been the potential here, as we shall see (3.2.2), unlike the rest of the study area, for the development in more recent times of continuous farming over very extensive tracts of land. Among the rocks of the Carboniferous system which form the lowland basin of central Ayrshire are the Coal Measures exploited since the Industrial Revolution (3.4.1). Associated with these are cannel coal and canneloid shales such as may have been used for the manufacture of beads in antiquity (Morrison 1979, 29) (7.6.2).

The mainland coast is also edged with raised beaches. These are very wide in parts of central Ayrshire forming extensive flats with light, free-draining soils, important in recent times for growing early potatoes, and latterly increasingly attractive for development (3.5.1). Locally near the coast sand dunes have built up behind the sandy bay which stretches between Ardrossan and Ayr. The smooth sweep of this bay is broken only by occasional dolerite sills which form low headlands at Troon and Prestwick. Heavy seas are frequent and the presence of banks, bars and rocks offshore make sailing near the coast treacherous (Hughes 1954, 137; Brackenbury 1981, 37). Indeed south of Farland Head the Ayrshire coast lacks natural harbours until Loch Ryan.



### 2.3.4 Southern Upland

The Southern Upland Fault line is clear in the linear valley at Glen App, but Ordovician and Silurian rocks extend north into the southern fringes of the study area. South of the River Doon at Alloway the coastline becomes rugged and high headlands isolate the occasional bays. The hinterland too is wilder, for the moorlands of Carrick are much broken by knolls, drumlins and low hills, with bogs in the hollows and peaty podzols on the gentle slopes and drumlin crests. This is another area of recent re-afforestation. As the ground rises around Loch Doon towards the mountain complex of The Merrick at the south-eastern boundary of the area of study organic soils again predominate with extensive areas of peat bog interrupting the grassy moorland.

### 2.3.5 Climate

The importance of the oceanic climate to the development of soils from parent materials and to the nature of land use and vegetation has been noted in the above discussion. The climate of the area, strongly affected by the Gulf Stream drift, is predominantly mild, wet and windy. Although easterly winds may at times bring drier conditions, especially in spring, prevailing winds are westerly and humid, being governed by the movement of Atlantic depressions. In general the rate and duration of precipitation increases with altitude and proximity to the west coast as well as with latitude. South to north as the terrain becomes more mountainous, the climate tends to be colder and wetter with the growing season shorter. Precipitation is also high in the western Southern

Uplands leaving the Ayrshire coast as the warmest and driest part of the study area. In detail however exposure is of extreme importance in an area lying open to prevailing winds. Exposed coastal areas and the higher ground can contrast markedly with sheltered valley situations where conditions may approach sub-tropical and can allow the cultivation of palm trees and other exotics. The varied conditions are emphasised by Robinson (1981, 19) in discussion of the natural vegetation and flora of the island of Arran. Several cryptograms occur whose distributions are centred in warm, oceanic or even tropical regions, but the island is also at or near the northern and southern limits of the distribution of a number of species. This reflects also the broad range and diversity of territory and habitats within the study area, and particularly on Arran with its marked topographical variation.

Sea water temperatures, also affected by the Gulf Stream, are higher than in the English Channel or the North Sea, especially in the early part of summer. Sea winds tend to be strong around exposed coasts open to the west, but often the waters within the Firth are sheltered by land so that the force of the sea and the wind are reduced giving calmer conditions which may be most marked within the sea lochs.

## 2.4 Aspects of the Environment in Prehistory

### 2.4.1 Introduction

Landforms, vegetation and soils are subject to change through time, weather and natural processes, as well as through the impact of man's activity. In this section aspects of the environment in prehistory will



be considered and the differences from the description of the area of study at the present time, given above, will be outlined.

#### 2.4.2 Raised Beach Formation

In the Holocene Epoch the most dramatic changes in landform affected the coastal fringe of the area of study. These resulted from movements of sea level associated with the period of rapid change from Lateglacial cold conditions to a temperate climate similar to that of today (Table 2.1). With the cessation of glacial and periglacial activity and the development of extensive vegetation cover, the major erosional processes are likely to have lessened, so that other landforms became more stable (Price 1983, 153).

South-west Scotland falls within the area in which the marine incursion caused by the global rise in sea level in the period c. 8400-5500 bp was followed by a local rise of land level leading to regression of the sea and the formation of the Main Postglacial Shoreline (Table 2.1). On exposed coasts, such as are found in the outer Firth of Clyde, raised sand and gravel beaches were formed, often overlying rock-cut platforms of Lateglacial or Interglacial age. These deposits, once generalised as the '25-foot raised beach', may occur at anything from 2-14m. above present sea level, depending on local conditions. Establishing synchronicity of former shoreline fragments on indented and varied coastlines remains difficult (Price 1983, 163). The possible complexity and short-range variation in altitude of the raised beach on such coastlines is illustrated in Gemmel's study of the Main Postglacial Shoreline of Arran (1973). Substantial progress has however been made in

recent work towards clarifying the chronology and extent of the marine transgression on the mainland of south-west Scotland. For example, it has been shown, from study of the Girvan embayment, that the beginning of the transgression in south Ayrshire is likely to have taken place soon after 8400 bp, whereas in central Ayrshire, around Troon, the timing is later - after 8015 $\pm$ 120 bp (Jardine 1977, 114-5). In general it may be suggested (Jardine 1977, 114) that the shoreline of the sea at the local maximum of the marine transgression was located 'a few tens of metres inland from the present position' along much of the mainland coast within the area of study. However in places the sea penetrated considerably farther inland, as has been shown for the Girvan embayment (Jardine 1962, 257) and the bays to north and south of Troon (Jardine 1971, 109-12; Boyd 1982, 15). The maximum of the transgression is likely to have been reached c. 6000 bp (Jardine 1975) and since that time there has been a fall in sea level of between 6 and 12m. (Price 1983, 182). The chronology of the regression is still not well established, but evidence from the Solway Firth suggests that in some places land recovery may not have commenced until c. 3500 bc (c. 5500 bp) (Jardine 1977, 115).

We must therefore envisage that the period in the fourth millennium bc when farming was first introduced into the area of study (6.3) was also marked by the onset of changes on the coast through land recovery. Initially the '25-foot raised beach', so prominent in recent agriculture, settlement and communication, is likely to have been submerged. In the islands and the Kintyre and Cowal peninsulas this is likely to have made overland movement difficult. Some time must have elapsed before this flat land, emerging through the period 5000-2000 bp (Price 1983, 182), became suitable for farming (Scott 1970). On the other hand the so-called



'50-foot' and '100-foot' raised beaches, established much earlier, could have offered agricultural land. Where larger incursions of the high sea occurred, a period of changing habitats during the regression period is likely. Marshland with extensive reedbeds developed in and around the lagoon and estuary areas. As land recovery continued these were colonised by grasses, sedges, mosses and damp woodlands. Sequences of this kind are likely not only for the embayments already noted on the Ayrshire coast, but also for areas of low-lying land on the islands and peninsulas. In the Machrie Moor area of Arran, where the high sea penetrated behind Torr Righ Beag and Torr Righ Mor (Steers 1973, 98), vegetational study has suggested mire conditions (Robinson 1981, 183-4). In the Laggan in Kintyre, fenland, probably with local standing water, changed to a more acid bog about the Atlantic - Sub-Boreal transition (Nichols 1967, 183).

The shoreline differences may also have implications for sailing. At the time of the high sea it is likely that the central Ayrshire coast, which, as we have seen, is currently exposed and difficult to approach, was more indented, as were some of the larger bays such as Brodick Bay on Arran (Steers 1973, 103). On the islands and peninsulas more sea lochs existed and present inlets were longer and deeper. Intervening parts of the coast, presently accessible by the raised beaches would have been rockier and more forbidding. We must imagine therefore that as land recovery took place during the period under study, shoreline conditions were gradually changing towards something like those of the present day.

#### 2.4.3 Vegetation

One of the striking features of the landscape of south-west Scotland

today is the scarcity of natural forest. Most of the deciduous woodland and coniferous plantations have been established during the last two hundred years (chapter 3). This represents a marked contrast with the natural forested landscape which we know to have developed quite rapidly in the warm, moist conditions of the Atlantic period (Table 2.1). Three zones of potential woodland distribution have been distinguished for Scotland by McVean and Ratcliffe (1962) from study of relict woodlands of the present day. The area of study falls within the west Scottish zone of potential oak forest with birch, ash, elm and alder. A synthesis of a number of pollen diagrams relevant to the forest development of the region made by Birks (1977, 1980) gives a regional picture. The major patterns of natural forest vegetation were seen to have been established c. 6000 bp, and forest would then have covered most of the study area, with the tree line reaching the summit of most hills in Galloway (Birks 1972, 207), and even in north Arran being well advanced up less exposed hillsides (Robinson 1981, 87-8). However, the expansion, density and composition of the forest were seen to depend on geographical, climatic and edaphic factors as well as the migration rates of the various trees. In detail it seemed likely that woodland cover on the more exposed islands and peninsulas within the study area would have been interspersed with natural open vegetation. Since Birks' study was completed this suggestion has been confirmed within the area of study as a result of the analysis of a long peat section from Machrie Moor, Arran (Robinson 1981). His findings indicate that a more open forest is likely to have existed on west and south-west Arran (1981, 133) than has been suggested for lowland and upland Ayrshire and the Galloway hills in studies by Turner (1970, 109), Durno (1956, 182; 1976, 36) and Birks (1972, 207).



On Arran the first interference with the forest by man may have been in the Mesolithic period (Robinson 1983), as will be discussed below (6.2.2). The impact of man on the forest of the study area once farming was introduced is integral to the theme of this thesis, and the detailed pollen analytical evidence is considered in section 6.3.

#### 2.4.4 Climate

Price (1983, 175-7) considers that the vegetational development in Scotland through the period to 5,000 bp (Table 2.1) is broadly in keeping with the sequence of climatic change deduced for north-west Europe as a whole from studies of vegetational change along with other evidence. A climate not unlike that of the present day is likely to have been established c. 9000 bp. In the Atlantic period, often termed the 'climatic optimum', as we have seen, warm, moist conditions favoured the spread of forest cover. Price agrees with Lamb (1972), who concluded from a range of evidence that temperatures are likely to have been slightly higher than those obtaining in the last 100 years (by about 2°C. in summer and about 1°C. in winter), and conditions wetter (with precipitation probably higher by 10-15%). However Price stresses that Lamb considered these to be general guidelines, best regarded as 100 year averages, and that regional variations should be envisaged. In the west of Scotland this seems borne out by the variation in the time over which regional forest expansion took place (Birks 1980). Locally climatic variations resulting not only from latitude, but also from aspect, would have occurred, such as we have noted for the area of study at the present time, although altitude may have been a less critical factor than at present,

allowing the higher tree lines discussed above.

In the period following 5000 bp there is greater uncertainty about the synchronicity of climatic change (Price 1983, 184-7). A crucial point which remains difficult is clarification of the respective roles of human activity and climatic deterioration in the decline of the forest. Evidence from bog stratification in Scandinavia suggests a change to a more continental climate from the Atlantic - Sub-Boreal transition. It may be that climatic changes also affected Great Britain. Lamb (1977, 416) has suggested, after a study of the probable distribution of prevailing atmospheric pressure at sea level, that conditions in the western seas may have become quieter during the third millennium bc facilitating sailing in the later Neolithic and Early Bronze Age. Skies clear enough for astronomical observation may also have occurred more often. From within Scotland, however, evidence for drying of bog surfaces at the beginning of the Sub-Boreal period is lacking (Smith 1981, 138), nor does study of pine stumps in blanket peats (Birks 1975) suggest major climatic change at this time. The decline of the forest is thus increasingly attributed to human activity. Nevertheless the expansion of farming in upland areas suggests warm, dry conditions in the second millennium bc (Mercer 1981, xv), before the trend to a cooler climate and increasing oceanicity suggested by the development of peat bog vegetation (Price 1983, 185). At Machrie Moor less land seems to have been under agriculture early in the first millennium bc (Robinson 1981, 98), suggesting contraction on to lower ground.



#### 2.4.5 Soils

It must be stressed that the distribution of soils within the area of study (fig. 2.4) shows soils which exist at the present time. Land capability evaluations are based on these and on the techniques and methods available to modern farmers. As was noted above, it is likely that in areas under agriculture over the last two hundred years (chapter 3), there will have been marked improvements in soil conditions. Bown et al. (1982, 22 and 135) suggest that field drainage will have been particularly important, but stone clearance, regular cultivation and application of organic matter will also have increased fertility. Davidson (1983) makes similar points in discussion of the potential for agriculture of the area surrounding East Bennan chambered cairn, south Arran, suggesting in particular a reduction in the occurrence of peaty gley soils through continuing agriculture.

A striking feature, noted above (2.3.2) and seen in figure 2.4 is the prevalence at the present time of peaty soils on the islands and the peninsulas of Kintyre and Cowal. These parts of the area of study fall within the region of Scotland where blanket bog is the climax vegetation under Sub-Atlantic conditions. It is likely however that the initiation of peat formation may have been in part at least the result of the activity of prehistoric farmers. Price (1983, 169-70) points out that where acid soils developed podsolisation would not have occurred as long as vegetation cover was maintained. Dimbleby et al. (1981, 142) consider that exposure on islands and peninsulas is likely to have become a critical factor only when the natural forest or open vegetation became disturbed. Robinson (1981, 11-13) notes the increased risk of soil

deterioration if clearance is by burning. In discussion of blanket peat formation he suggests that even partial forest clearance or grazing within the forest may create conditions conducive to peat formation. He also notes that periods of peat initiation often coincide with increased forest clearance. From his palaeobotanical investigations on Machrie Moor he suggests that podsolisation is likely to have begun there from c. 3500 bp (around 1500 bc) with blanket peat formation initiated from c. 1200 bc (1981, 96-7). Steady expansion of peat formation under deteriorating climatic conditions took place from c. 600-500 bc (1981, 121).

If this chronological pattern is in any way typical of the Firth of Clyde area, we should think in terms of only slight deterioration in soil conditions through the Neolithic and Early Bronze Age following the introduction of farming. The fact that the main period of widespread soil deterioration and peat formation falls after the period under study is however critical to consideration of the archaeological record for our period. Over the large tracts of the area of study where blanket peat is widespread today archaeological evidence other than upstanding monuments - flint scatters, field systems, burial and deposition sites - may have been masked by peat growth, and although preserved have remained largely undetected. This is an important factor to be considered in assessment of the known distributions of sites and finds within the area of study, and therefore to interpretation of the evidence contained in the archaeological record. Other factors which have affected the formation of the present archaeological record are the subject of the next chapter.

## CHAPTER 3

### THE FORMATION OF THE ARCHAEOLOGICAL RECORD

#### 3.1 Introduction

##### 3.1.1 Definition

As was noted above (1.1) 'formation of the archaeological record' as used in this thesis refers to the ways in which knowledge of archaeological remains has accumulated through time. The archaeological record comprises listings of monuments, reports of excavations and of destruction of sites, and records of artefacts. It is a synthesis of the information gathered through time concerning the archaeological remains which are known, in this case for the Neolithic and Early Bronze Age within the Firth of Clyde. An understanding of factors influencing the formation of this record, which may have affected both its content and quality, is therefore important in any research project. As has been noted (1.3) this, aspect of the evidence has so far received little systematic attention in the study area.

##### 3.1.2 Initiation

The first antiquarian studies emerged after a long period in which monuments were seen as part of folk-lore, myth and legend. Some came to be associated with superstitions and traditions, still reflected in local names. Others, lacking such significance, may have disappeared without



trace. Investigations of monuments by the curious or the treasure-seeker or their destruction in the interest of convenience or progress went largely unrecorded.

### The Rational Approach

Piggott (1976) sees the 'New Learning' of the sixteenth and seventeenth centuries as a stimulus to the separation of archaeology from history and the application of scientific and empirical approaches. This is seen in Scotland in the work of Sir Robert Sibbald who used a survey similar to that used by Plot in his Scotia Illustrata (1684) in a study of stone circles and standing stones in the north.

### The Romantic Ambience

As Piggott (1976) points out the promise of this period was not immediately fulfilled. The early eighteenth century was marked by a decline in standards of enquiry, and interest in antiquities later in the century took inspiration from the 'Romantic Movement'. Antiquities and ruins, like mountains, were encompassed within a romantic concept of the picturesque. In Scotland, more settled and accessible after the '45 Rebellion, tours became popular in the wake of travellers' accounts.

It was from these beginnings that serious study of antiquities and popular interest began.

### 3.1.3 Social and Economic Change

Slaven (1975, 3) notes that two hundred years ago the west was empty of development apart from small hamlets. Agriculture was organised around the 'ferm touns' with their unfenced fields. Adams (1980, 169-70) describes an 'open, largely incoherent farming scene, half moorland with



few trees'. It is therefore pertinent that a long period of agricultural and industrial development, involving radical changes to the landscape, was also beginning at the time when we can trace this initiation of an archaeological record. For what happens to the land itself, in which the monuments and finds are situated, is critical to the formation of that record. This is especially important in a varied region such as that of the present study. If the amount of development has not been uniform in time and place, patterns of survival, discovery and preservation of monuments may result which may vary for different kinds of archaeological remains (Stevenson, 1975). This point is of maximum importance in a study such as this in which a wide range of monuments and finds is considered. The interaction of social and economic development with antiquarian interest and activity at both local and national level will also be relevant, and may relate to regional differences in the archaeological record.

In order to present a clear picture of this complex problem a set of tables has been prepared (tables 3.1-3.4) to filter the main factors affecting the formation of the archaeological record at different times, and allow important trends to emerge. The two hundred year period has been divided into sections appropriate to the development of the archaeological record. In general these conform well with phases in social and economic development.

### 3.2 Period before 1780

#### 3.2.1 The Archaeological Record

Four examples suggest the beginning of interest in antiquities in the area of study. 1. The earliest comes from the work of the Scottish cartographer Timothy Pont who wrote 'topographic' accounts to accompany maps prepared in the late sixteenth century. Of these only the one written about the Cunningham district of Ayrshire survives. It contains information observed by Pont of places of antiquarian interest as well as details gleaned from local clergy. However its importance at the time when it was written remains obscure, in that the limited first issue, as far as is known, was only privately issued (Cosmo Innes). Later versions were published in 1858 by the Maitland Club and by Dobie (1876).

2. A travelogue by Martin first produced about 1695 tells of a visit to places within the area of study and reports on 'curiosities and marvels', including the 'erected stones and circles' on Arran (Martin c. 1695, 256-7; 1716, 219-20).

3. Around the same time Lhuyd made a study tour of Celtic countries including the west of Scotland and travelled overland in Kintyre, visiting Gigha, on the way to Iona. Unfortunately he died without completing his journal and only a few sketches survive from his notebooks. These are of interest in showing monuments at that time, and include the megalithic cist and standing stones at Ballochroy (KT6) in west Kintyre. The drawing shows that the cist was covered by a cairn, probably dismantled later for building a nearby dyke (Campbell and Thomson 1963, 304; Burl 1980a, 192).

4. Pennant's account (1774-76) of travels into parts of Scotland then little known is in romantic vein, but includes detailed observation. On Arran he noted the proliferation and grandeur of the monuments: 'By the immense cairns, the vast monumental stones and many relics of druidism,

this island must have been considerable in very ancient times'. He gave detailed descriptions: 'Leave the hills and see at Feorling another stupendous cairn, a hundred and fourteen feet over, and of a vast height, and from two of the opposite sides are two vast ridges; the whole formed of rounded stones or pebbles brought from the shores' (1774-76, 172 and 182-3).

We may note that in these very early archaeological records, travel writers were already drawing attention to the monuments of Arran (table 3.2).

### 3.2.2 Social and Economic Development

Lenman (1977, 67) sees the period 1727-80 as marking the beginnings of 'radical industrial and agricultural change' in Scotland, as the country became more settled, investment could be attracted from England and trade improved.

In Ayrshire (table 3.1), Alexander, Earl of Eglinton, was one of the early 'Improvers'. His estates near the River Irvine, forming a particularly large territory for south-west Scotland, had the potential for improvement on the grand scale, perhaps, as Lebon (1946a, 103) suggests, for splendour rather than for profit. The main period of improvement came after 1760. Lenman (1977, 138) points out that 'wherever it was profitable to improve the Ayrshire plain, this process was marked from 1760-70'. Lebon (1946a,b) carried out detailed studies of estate plans in Ayrshire and south Renfrewshire. He distinguishes 'replanned' areas from 'evolved' areas. Replanning involved ruthless reshaping to form regular rectangular fields, with straight roads, new farm buildings



and shelter belts included in the design (fig. 3.1), and was extensive and quite continuous in central Ayrshire (fig. 3.2). North and west of the Irvine and near the Renfrewshire border, where estates were in general smaller, enclosure took place, but plans evolved from the pre-1750 structure with wedge-shaped or radiating fields.

Much of the financial backing for improvement in Ayrshire at this time came from the over-liberal advances made by the Ayr Bank which, although supported by influential landowners, crashed in 1772. Smout's description (1964, 219) of the south-western lairds of 1770 'hurriedly applying the precarious credit of the Ayr Bank to the enclosure of their lands' suggests that recording of monuments and finds might not have been an immediate priority.

In the rest of the area of study the pattern of development was more piecemeal. In the fertile lowlands at the south end of the Kintyre peninsula (table 3.3) improvement was begun before 1780 on the Argyll estates, but the main impact came later (McClement 1927). Campbeltown increased in importance at this time with prosperous merchants engaged in international trade, a strong fishing and whaling industry as well as local distilleries and a colliery.

Another focus of development before 1780 was the island of Bute (table 3.4) and the town of Rothesay where the third Earl of Bute, unlike his absentee predecessors, began to invest in renovation (Whyte 1935). A water-powered spinning mill was established in 1779. Pennant discusses the agriculture: 'The cultivation of a very great tract on this eastern side is very considerable in the article of inclosure. It has the start of the more southern counties of this part of the kingdom: the hedges are tall, thick and vigorous, the white thorns and wicken trees now in full



flower: and about two thousand acres have thus been improved' (1774, 158-9). Limited agricultural improvement was also carried out on Great Cumbrae from 1770 and the village of Millport established (Aiton 1816, 177).

Pennant's description of prosperous agriculture on Bute contrasts strongly with the lack of improvement he noted for Arran (1774, 176-7), (table 3.2). Although Pennant may have taken a pessimistic view (Mackenzie 1914, 198), it seems clear from Aiton's assessment (1816) that little improvement had taken place, although plantations had been established in sheltered areas to restore Arran's depleted forests. Aiton notes the marked difference from Ayrshire and Renfrewshire and comments that there were problems of absentee proprietors, poor facilities and barren ground.

### 3.3 Period 1780-1845

#### 3.3.1 The Archaeological Record

##### Foundation of the Society of Antiquaries of Scotland

The beginning of this period is marked by the founding of the Society of Antiquaries of Scotland (1780). It formed a core of interested people, but a consistent contribution to disciplined study only began from about 1840 (Graham 1970). In the early years the most significant work was the collection of parish accounts after the manner of Plot and Sibbald which opened the way for Sinclair's 'Old' Statistical Account (O.S.A.) (1791-9).

The two Statistical Accounts offer an insight into how antiquities were recognised and described at this time (tables 3.1-4). Coverage of antiquities by parish ministers in the O.S.A. is quite varied, depending

to some extent on their interests and priorities. Within the area of study some 32 accounts do not include discussion of antiquities, notably parishes in Ayrshire and Renfrewshire. Detailed descriptions tend to concentrate on ancient buildings and ruins, but 'druidical' remains are also discussed. Cairns are usually assumed to mark graves of heroes described by Ossian. There is much speculation, for example the range of functions - from cells for hermits to hiding places for booty - suggested by the minister of Kilfinan, Cowal, for 'boradhs' or chambered cairns (vol. 14, 256). At a time when investigations of cairns were thought of in terms of opening and digging out the contents, an unusually perceptive early excavation was that of Seton (1831) of the cairn of Cnocan Sithein at Machrihanish, Kintyre (KT 45).

A treatise on the geology of Arran by Headrick (1807) includes 'Notices of Antiquities' throughout the text as they were noted in fieldwork. Aiton refers to Headrick's account in his 'General View of the Agriculture of Bute'. He had planned an appendix with drawings of monuments at Tormore and Auchagallon. His comment on the miscarriage of this plan is significant: 'The subject is not much connected with agriculture' (1816, 401)!

Nevertheless one of the points of difference between the accounts in the O.S.A. and the more ordered records in the New Statistical Account (N.S.A.) (1845) is that the N.S.A. does contain references to the discovery of finds and destruction of monuments in the course of agriculture and road building. For Ayrshire many of these are retrospective, and mainly concern the finding of urns and burials 30-45 years earlier, as at Fail, Townend of Threepwood, Ladyland, Seamill and Dalry (AY 65, 16, 15, 37, 27) (vol. 5, 754, 578, 704, 258, 220). An early

opening of the Neolithic cairn at Cuff Hill, Beith (AYR 5) (AY 17), was to obtain stone for road-making in 1813 (vol. 5, 578). This picture contrasts with the immediacy of the account for Kilbride parish, Arran, of current and recent destruction of monuments (vol. 5, 22-5). Discussing 'relics of earlier times' the author comments: 'Some of these are disappearing every year before the pickaxe and the plough.'

### 3.3.2 Social and Economic Development

The years 1780-1840 saw 'the triumph of commercialisation and industrialisation' (Lenman 1977, 101), as Scotland moved rapidly from the basically agrarian and rural economy of 1780 to the industrial and urban society of 1840. Key factors in this process were, first, the mechanisation of the textile industry through water-powered mills, and, later, the concentration of textile manufacture in urban locations when steam-powered mills were installed. The coal industry expanded and from 1830 iron manufacture increased. Hand in hand with all this progress went rapid improvement of communications, roads, canals, ports and railways. By 1840 Scotland was on the verge of 'railway mania' (Lenman 1977, 155).

Within the area of study Ayrshire (table 3.1) and Renfrewshire which, as we have seen, had a lead in agricultural improvement and other development by 1780 continued to attract investment and the population increased. The Irvine valley for example was a growth area in the textile industry with mill towns like Darvel and Galston specialising in fine silks and muslins and large water-powered mills established as at Catrine. An international port and industrial complex



were developed at Ardrossan, although the planned canal link to Paisley was not completed (Slaven 1975, 32). The newly completed commercial farms were well placed to cater for the expanding town and urban markets, for by 1800 the skeleton of the modern road system had been built. The coal industry expanded, especially from 1830, to meet the demands of the iron industry. The main period of railway building was from 1825-50. An 'urn' was recorded as found during railway construction at Barassie (AY 51) (N.S.A. vol. 5, 677) and a cairn with cists is known to have been destroyed at Kilmaurs (AY 54).

The pattern of development is very different in the islands and the peninsulas of Kintyre (tables 3.2-4) and in Cowal. As we have seen these areas lagged behind Ayrshire and Renfrewshire in 1780, so that it was during the period 1780-1845 that agricultural improvement was taking place. However with good arable land limited and interest of landlords variable, progress was uneven. In the southern lowlands and coastal fringes of Kintyre and on Gigha, for example, improvement continued, but in parts of the north of the peninsula joint farms based on clachans continued (Gailey 1960). Settlement in the hilly interior declined as arable gave way to sheep farming.

Sheep had likewise replaced the black cattle in the peninsulas of Cowal which, like much of the west Highlands, remained largely untouched by the earlier phases of the agricultural improvements (N.S.A. vol. 5, 467).

On the island of Bute, where improvement was well forward in 1780, further work was proceeding after 1800 to reclaim waste land and extensive plantations were established. Discussing this Aiton (1816, 118) mentions that only three stones remained of a 'druidical temple' at Kingarth (BU

31), the rest having 'now been removed, some of them recently'. On a more positive note he found that Lord Bannatyne had enclosed a circle of stones 'west of Kames Castle at Falgolach near St Colmack's Church' (BU 12) and planted trees (plate 15).

The steady progress of agrarian reform on the island of Bute contrasts with the continuing delay and difficulty on Arran, where enclosure was only getting under way on the Hamilton estates between 1815 and 1835 (Mackenzie 1914, 213). The large rectangular fields and solitary farmhouses of the present day were established at this time, but mainly in the southern half of the island. Before long sheep farms were created in the larger glens and major emigrations of population took place. Estates on the coasts in the north and west remained untouched at this time, and there are farms which still show no regular pattern of fields and holdings (Storrie 1967).

Variable patterns thus typified the agrarian reform of the islands and mainland peninsulas. It is at this point however that these areas, distanced from city markets by sea crossings or lengthy land routes, began to show a marked divergence in commercial development from that of Ayrshire and Renfrewshire. It was just not possible for mechanised industry to develop (table 3.1 cf. tables 3.2-4). The cotton mill at Rothesay declined about 1830 as did the mill at Millport. Campbeltown retained some importance, especially before the railhead was established at Oban (McClement 1927, 23). Industry apart from fishing was often short-lived - the distillery at Torlin, Arran closed in 1834 and the manufacture of drainage tiles at Clachaig and wooden pirns at Pirnmill also failed (Mackenzie 1914, 237).

Towards the end of this period the change to steamboat ferry services

began. Summer sailings to Arran became available from 1825, and the scene was set for the opening up of the Firth of Clyde for tourism.

### 3.4 Period 1845-1914

#### 3.4.1 Social and Economic Development

Lenman (1977, 136) entitles a chapter about economic development in Scotland at this time 'The Building of a Mature Industrial Economy 1840-1914'. He sees this period as marked by the dichotomy between the development of the Lowlands and that of 'Gaelic-speaking areas'. This disparity reflects the hardening of patterns which had been developing from the late eighteenth century, but were intensified as an economy based on heavy industry was rapidly established, and came to be concentrated in marine engineering, maintaining the importance of the Clyde area. In human terms the emergence of this advanced industrial society in the Lowlands meant a rapid growth of urban areas. Lowland farming areas, especially those brought within easy reach of major conurbations by improved transport, enjoyed a period of prosperity from 1837-74, especially after 1860 - the 'Golden Age of Agriculture' (Symon 1959, 189). By the end of the nineteenth century a trend to increased pasture and a reduction in tillage had begun. The 'Gaelic-speaking areas' of Scotland in contrast continued to suffer from an absence of industrial development, loss of population, economic crisis and disruption of community life and culture through the introduction of sheep farming and the creation of grouse moor and deer forest.

As we have seen two distinct zones, in line with the dichotomy



suggested by Lenman, were already apparent in the area of study by 1845. From then until 1914 the presence of a major conurbation on the Clyde was the dominant factor and affected the two zones, but in different ways.

Ayrshire (table 3.1) and Renfrewshire, adjacent to the industrial zones on the Clyde, fell within the lowland growth area. The mineral-rich areas of north Ayrshire were opened up bringing disturbance to the landscape of previously empty areas with potential effects on archaeological remains. Manufacturing centres such as Kilmarnock and Irvine expanded, and in coastal towns development began for tourism and recreation. Sites discovered in connection with town development have been recorded, for example in Stevenston (AY 42-4) (Morrison 1971) (fig. 3.3). However, much may have gone unrecorded. In rural Ayrshire and Renfrewshire drainage of farm land and reclamation of marginal areas were intensified after 1845 (Slaven 1975, 72). Related to this might be the find of a bronze spearhead in Whitehaugh Moss (AY 87) (Macdonald 1884, 53) (plate 24). Mixed farming increasingly gave way to specialisation in produce such as dairy foods, fruit and vegetables for town and city markets.

The islands and the mainland peninsulas (tables 3.2-4) were less well placed for providing goods and farm produce for the cities. Variable patterns of agriculture continued. In Kintyre farming prospered in the south where the low ground in the Laggan, now reclaimed, was within easy reach of Campbeltown. Extensive rebuilding took place in the town and quay and several archaeological sites and finds came to light - burials and cists in the town (KT 64) (Gray 1894) and a cairn and cists at Trench Point (KT 63) (Campbeltown Courier 2.11.1878; 4.9.1897). In Bute and on Inchmarnock both the acreage under cultivation and the numbers of

livestock increased (McNeillage 1881, 4). Hewison (1895, 73-4) tells of destruction and filling in of 'cavities or chests' at Carnbaan cairn, Lenihuline Wood (BUT 3) (BU 7) 'about a dozen years ago' in the interest of safety of sheep. On Arran some farms in the north were being improved in the mid-nineteenth century (Mackenzie 1914, 227). The grounds of Brodick castle were relaid, entailing moving the village to Invercloy. McArthur (1873, 49) notes the finding of a cist with urn (AR 70) during this work. Consolidation of improvement in the south went ahead with drainage and reclamation schemes as Arran caught up with agricultural improvement.

The whole of the island and peninsula zone, although outwith the zone of urban-related growth, was ideally suited to meeting the needs of city dwellers for recreation and tourism. From the time that modern transport became available this became a major part of the economy. A by-product was the increased visiting of antiquities and opportunities for archaeological research. Here Arran was the major attraction. In the second half of the nineteenth century popular accounts of the island were written with tours in mind, such as the day trip from Glasgow described by Landsborough (1872) to climb Goatfell or visit Machrie Moor. The reviews of McArthur's book quoted on the flyleaf of the 1873 edition suggest the publicity and attention which the monuments on Arran received. Towns and villages were developed, especially in the more sheltered and accessible east coasts of Arran, Bute and Cowal.

#### 3.4.2 The Archaeological Record

##### The Danish Connection

The second half of the nineteenth century was a period of rapid ideological transformation in archaeology in Scotland. Progressive scholars such as Laing and Wilson, who had close links with archaeologists in Scandinavia, were quick to adopt the new Three Age system developed in Denmark by Thomsen and Worsaae, and to use the Danish model in re-ordering the affairs of the Society of Antiquaries and creating the National Museum. As Clarke (1981, 114) points out the dominance of the central institutions from this time produced a pattern of activity quite different from that in England, where county societies were already the norm. And organisational issues were soon a matter of debate. In papers in the Transactions of the Glasgow Archaeological Society Young (1881), Guy (1881), Munro (1885) and Cochran Patrick (1887) discussed the merits and disadvantages of national institutions. There was growing opinion that local associations could be important, in gathering information and finds, especially in view of the inability of the Ordnance Survey to undertake a proper survey on the ground when preparing the large-scale plans. The information on antiquities gathered from 'resident gentry, ministers, schoolmasters and others' (correspondence PSAS 2, 1855, 129) did not in general extend the archaeological record beyond what was already known.

These organisational issues became important as the significance of Scottish antiquities and their place in European prehistory came to be recognised from the first authoritative texts. Wilson was the pioneer in applying the Three Age system to Scottish material (1851). Anderson (1886) used his wide knowledge of European museums to emphasise the importance of study of comparative material. His classifications of Scottish material drew attention to geographical variations and their chronological and 'cultural' significance. Much of his work thus



foreshadows the move to a less static view of prehistory seen in the early twentieth century, initiated in Abercromby's study of British Bronze Age pottery (1912). In stressing pottery as an indicator of cultural change or movement of people, his work was seminal to the theories of diffusion, immigration and invasion later developed by Childe. The geographical approach using distribution maps was furthered by Crawford in 1911.

The development of archaeology within the study area shows much variation. This is still related to social and economic patterns, but in addition the local and national development of archaeology was becoming a significant factor.

#### Arran (table 3.2)

It is not surprising that Arran was soon a focus for excavation. After McArthur dug over the double circle 5 on Machrie Moor (1861, 50-51), a more intensive programme of investigations of the celebrated stone circles was undertaken by J Bryce (1862). To the present-day reader J Bryce's account reads like a 'whistle-stop' exercise as one circle after another was trenched and probed for cists in the course of only a few days. A more major programme of excavation over several seasons was begun by the anatomy professor T H Bryce in 1890 (1902, 1903, 1909). Funding was received from the Carfrae and Primrose bequests and the project included work on Bute and Islay as well as a visit to Kintyre. A primary aim was to obtain human skeletal material, but Bryce was also conscious of the urgency of making a systematic record of the different types of cairn. In addition he made a study of the Neolithic pottery against comparative material from Europe. The 1909 report concerns cairns which had come to light during a survey of Arran by members of the Arran Society of Glasgow - a project which involved landowners, farmers and residents on Arran and

aimed at compiling a complete inventory of Arran's antiquities for the forthcoming Book of Arran (Balfour 1910). In scholarship the Book of Arran marks a major step forward compared with McArthur's popular, rather romantic account, and the text was firmly based on work in the field. This programme of excavation, field work and publication, a major undertaking in terms of early twentieth century archaeology, was achieved with local and regional support as well as with backing from the Society of Antiquaries and the National Museum.

#### Kintyre (table 3.3)

A small number of investigations of sites took place, under the auspices of the Kintyre Scientific Society founded in 1890 (Colville 1930). The 'Beacharra Cists' (ARG 27) (KT 13) were later visited by T H Bryce and a report of the findings was made with drawings of the finds which had been placed in the recently established Campbeltown Museum (Bryce 1903, 102-9). Balnabraid cairn (KT 57) was investigated by McKinlay (1911) after erosion revealed cists and urns. It might have seemed that Kintyre would have offered something of the same potential for archaeologists as Arran. Its terrain was not dissimilar and agricultural improvement, although begun early, had been of limited extent. However it lacked the magnetism that Arran had acquired and being less accessible and of less certain potential seems to have been left largely to its own resources.

#### Cowal

The peninsulas of Cowal remained very much an archaeological backwater at this time. The only report of investigation of a site is a report by Roger (1857) of the finding of a cist uncovered during a storm at Ardyne near Castle Toward (CO 20).



### Bute (table 3.4)

The earliest reports of investigations during this period are newspaper reports. One of these, a letter from the Marquis of Bute to Anderson at the Society of Antiquaries (Glasgow Herald 25.3.1887) described the Mountstuart cist and its contents (BU 34). T H Bryce used the 6" map and a list of sites compiled by Hewison (1893) in selecting sites for excavation. He comments on the richness of Bute in prehistoric monuments (1904, 17), but notes their dilapidated condition due to widespread cultivation and frequent robbing of cairns to build field walls. Although the Mountstuart finds were donated to the National Museum, those from Bryce's excavations remained in the local museum at Rothesay. This museum had been established in 1872, and was moved into new premises in 1907 (Scott and Scott 1955, 18). Hewison's book (1893) gathered together the information on antiquities and benefited from being written by someone with first hand knowledge of the island. The Mountstuart discoveries may have further stimulated local interest, for the Buteshire Natural History Society was founded in 1903.

### Cumbræ Islands

In 1879 a number of cairns and 'tumuli' on Great Cumbræ (IS 1,2,4) were investigated by MacGown (1883). Some had been discovered during agriculture and road works. A connection with Glasgow was established with publication in the Transactions of the Glasgow Archaeological Society and finds were presented to the Glasgow Art Gallery and Museum. In 1886 Lytteil produced a guide book to the Cumbræes with notes on antiquities. Sites were also listed by Hewison (Appendix 1).

### Ayrshire and Renfrewshire

The parts of Renfrewshire within the study area are a blank



archaeologically in this period.

In Ayrshire (table 3.1) however this was a time of great activity, although most of the work done was not in the field. Name Book records of cairns in Ayrshire - many much destroyed - fall mainly in upland areas. South Carrick is an example. In the lowlands records are more often of find spots, and the nature of sites recorded was often obscure. Excavation was limited to a small number of sites: the 'tumulus' at Courthill, Dalry (AY 25) (Cochran Patrick 1874), the cairn at Cuff Hill, Beith (AYR 5) (AY 17) (Love 1876). The Cinerary Urn cemeteries Misk Knowes, Ardeer (AY 46) (Mann 1906) and Nelson Street, Largs (AY 10) (Munro 1910) are examples which contributed uniquely to the archaeological record (7.7.2). In 1914 the first investigations took place at Muirkirk. Some of the monuments (AY 89-96) were thought to be 'hut circles'. In his report Baird points out that in this upland parish, with land used mainly for grazing, monuments had escaped destruction through agriculture (1914, 373). The main focus of activity was however the collection and recording of artefacts. This was accomplished by the 300-strong local archaeological association (the Ayrshire and Wigtownshire Archaeological Association later the Ayrshire and Galloway Archaeological Association), founded by Cochran-Patrick. Much of the material came from poorly understood or uncertain contexts, having been kept by local landowners or held in local collections such as that of Dr. Sloan (Macdonald 1878, 38). Beautifully illustrated catalogues were prepared (e.g. Macdonald 1878, 1882, 1884), and the artefacts were donated to the National Museum. Cochran-Patrick also encouraged John Smith to write his book on antiquities in Ayrshire (1895). His experience in geology coupled with his local knowledge made his book a valuable source. Cochran Patrick was

the moving spirit in generating this local and national interest. After he died in 1897 the local association was disbanded through lack of support and was not reformed until 1947.

### 3.5 Period 1915-1954

#### 3.5.1 Social and Economic Development

During this period there is a marked slowing of the pace of change, and the pattern of development established by 1914 remained relatively stable. Both industry and agriculture were strongly affected by the two world wars. On the land the general trend to pastoral farming continued, with consequent reductions in numbers of farms (Symon 1959, 209). During both world wars however the acreage of ploughland increased. In the depression between the wars land was abandoned and fields and buildings neglected. Government involvement in farming increased and after World War II began to be directed to encouraging use of marginal and hill land. The Forestry Commission was also established.

In the area of study the two-zone pattern established by 1914 was maintained. In Ayrshire (table 3.1) and Renfrewshire towns expanded, especially on the coast where there was both the demand for housing and the potential for tourism. A gradual infilling of the coastal strip was under way. Agriculture in Ayrshire and Renfrewshire continued to be specialised, with the production of dairy foods and potatoes stimulated by the formation of Marketing Boards (Strawhorn and Boyd 1951, 47).

In the islands and mainland peninsulas the modernisation of the fishing industry meant fewer ports and smaller numbers of boats. Some



fishing ports such as Tarbert, Kintyre and Rothesay, Bute began to cater for yachtsmen as pleasure sailing increased. A yachting party was thought to have been responsible for disturbing a cairn at Ascog Bay, Cowal (CO 12) (Scott 1950, 212). The continuity of land use patterns on Bute is stressed by Whittington who noted in 1963 that farming had changed little in a hundred years. Here tillage was maintained, but elsewhere agriculture tended to be concentrated on livestock (Coppock 1976, 200), with dairying important in places - south Arran, south and east Kintyre and Gigha. At this stage the impact of forestry was only beginning in the area of study.

### 3.5.2 The Archaeological Record

There was a growing dissatisfaction at the beginning of this period with aspects of the Three Age model of prehistory. Awareness of the relevance of geography and anthropology to archaeology was increasing, and there was a desire to find a more 'people-centred' approach to the material remains of the past. As early as the 1920s Childe began to build on the work of Abercromby and others who had placed Scottish archaeology in a European perspective. His dynamic model of prehistory developed the geographical approach to archaeological data in the spatial definition of cultures and culture groups (defined by Childe 1929, v-vi). A major influence here was the regional approach pioneered by Fox in his work on the archaeological remains of the Cambridge area (1923). In 1935 Childe applied his ideas to the detail of the Scottish archaeological record. As we have seen (1.2.4 and 1.2.5), a major concern for the Neolithic period was the origins of the regional groups of



megalith builders, whereas synthesis of the Bronze Age was more artefact-centred and discussed in terms of Beaker invaders, Food Vessel users, Urn folk, metal prospectors and smiths. Fox's distinction (1932) between the Lowland and Highland zones of Britain allowed an explanation through geographical and environmental factors of differences in chronological development. Regional variations could reflect the degree to which new cultures became dominant or were absorbed into the old. Thus in Prehistory of Scotland Childe envisaged six successive cultural stages, but not all of these occurred in the Highlands. Diffusion was thus the keynote, although continuities were recognised. In the 1944 Rhind Lectures Childe examined the application to Scottish prehistory of ideas of Soviet archaeologists that culture change was through internal evolution. He concluded that diffusion and migration were necessary to explain the Scottish archaeological record (1946).

Childe's paradigm continued to be accepted into the 1950's, although the detail was updated through time. Thus Piggott's synthesis (1954) of Neolithic cultures of the British Isles brought out clearly the diversity of cultural groupings and the complexity of their relationships as well as recognising an overlap of Neolithic and Bronze Age traditions. It was Piggott who took the lead in the 1940's in setting high professional standards in the field in survey and in excavation (Piggott and Powell 1949; Piggott 1948). Both were to benefit Scottish archaeology in the post-war period.

Excavation was not a major activity in the area of study between 1915 and 1954 (Graham 1970; 1978). Nor was it a focus of major inventory work by the Royal Commission at this time, although a small survey was made by Childe and Graham (1943) of certain known monuments in Cowal and Ayrshire.

In Ayrshire (table 3.1) some ongoing excavation continued at the sites around Muirkirk (AY 89-96) (Fairbairn 1927). Interest was stimulated by the suggested settlement evidence for which a reconstruction was discussed by Childe (1935, 118-9). Embanked stone circles at Nith Lodge and Beoch Hill (AY 99, 100), also in upland areas undisturbed by agriculture, were investigated by McLeod (1938). For most of this period the Ayrshire association was in abeyance. Renfrewshire continued blank in the archaeological record for the area of study.

In the island and peninsula zone archaeological activity continued variable. In Arran (table 3.2) after the intense work of the late nineteenth and early twentieth centuries little was done in the field. In Kintyre (table 3.3) slow but steady progress in excavation and survey continued through the Kintyre Antiquarian Society which took over from the Scientific Society in 1921. Further work at Balnabraid cairn (KT 57) in 1913 was supported by Mann and Bishop (Galloway 1920). In 1935 McInnes prepared a descriptive catalogue of local prehistoric material in Campbeltown Museum. Field surveys included monuments of Skipness (Graham 1919; 1920), standing stones (Colville 1930), cup-marked rocks and standing stones (Hall 1939). Sites on Gigha were described by Anderson (1939). In the Cowal peninsulas there was still little activity. One paper describing cairns and a standing stone at Ascog Bay (CO 10-12) includes a report of an earlier excavation (Scott 1950). On Bute (table 3.4) there was continuing local interest and investigations were mounted in response to discoveries. For example the finding of a stone axe and other relics during quarrying at Townhead, Rothesay (BU 39) led to the excavation of a Neolithic settlement site, and a number of cists found in ploughing were recorded (Marshall 1930; Marshall and Bryce 1935). In the

early 1950's the collections in the Rothesay Museum were reorganised (Scott and Scott 1955; Blair 1976).

With little new input into the archaeological record for the area of study, the work of Childe and that of others such as Daniel (1941) and Davies (1946), who contributed to the debate on megalithic chambered cairns, or the work of Mitchell (1934) and Young (1951) on Beaker and Food Vessel pottery, was based on the existing record. A wide-ranging article by Scott (1951) illustrates themes which dominated the literature at this time as archaeologists, committed to a diffusionist model for prehistory, concentrated their research on delineation of 'cultures' and their interaction by migration, invasion or other contact. His work on location of resources remains a valuable source of reference for the area of study as well as the rest of Scotland.

### 3.6 Period since 1955

#### 3.6.1 Social and Economic Development

Lenman notes that the Scottish economy has shown little growth in this period (1977, 251). Adams gives the following description: 'The twists and turns of government policy since World War II have fluctuated between shoring up the old industrial centres on exhausted coal fields or seeking growth points which would regenerate the national economy' (1979, 215). Extraction of North Sea oil has been the most significant innovation. Although economic growth has been erratic, there has been a major transformation in the scale of development, with extravagant use of land to meet modern requirements for urban and industrial centres. This



has been facilitated by increased public control of land, and planning for larger regions. The loss of agricultural land to industry, road building and housing has accelerated (Coppock 1976, 237). Large-scale management has also become important in rural life, especially in the extension of grazing on to hill and marginal areas and in the major re-afforestation programmes of the 1950's and 1960's (Best and Coppock 1962).

A key factor in these developments has been the introduction of powerful earth-moving, deep ploughing and quarrying machinery. This has posed a major threat to archaeology through the rapidity with which large areas of land may be disturbed and transformed, and the danger that archaeological remains may go unnoticed (Taylor 1972; Rahtz 1974; Proudfoot 1982). Deep ploughing of marginal and hill land for forestry will not only obliterate surface indicators such as flint scatters, but also destroy evidence in the upper layers of soil (Jackson 1978). Moreover areas affected are those previously untouched by earlier agricultural improvement - the 'zone of survival' (Taylor 1972, 109) with potential for discovery (Stevenson 1975, 104).

In the urban-related areas, Ayrshire (table 3.1) and Renfrewshire, the impact of large-scale works since 1955 is most marked on the coast north of Doonfoot, where encroachment on to agricultural land and the disappearance of the natural coastline has intensified. Re-afforestation has been limited. Nevertheless the areas affected have been in parts previously undisturbed, such as the Southern Uplands and areas of higher ground on the Ayrshire-Renfrewshire boundary. Around Gryfe reservoir and Loch Thom (AY 4, 5) evidence of prehistoric activity was discovered (Newall 1974; 1976).

In the islands and the peninsulas (tables 3.2-4) forestry has been a

major new development. However the picture is not uniform. The island of Bute for example, along with Inchmarnock and the Cumbraes has been little affected as the strong farming tradition has been maintained. On Arran however major re-afforestation programmes were initiated in the 1950's in the east and south (Stevenson 1962, 484), and more recent plantations have been in the west where work continues. Some previously enclosed farms such as Aucheleffan and High Cloined have disappeared (Fairhurst 1981, 76), but the main impact has been in upland and marginal areas. Kintyre has been another area of major re-afforestation (Best and Coppock 1962, 107) especially in the east and south. Most of the grassy hill land affected had previously been used for sheep. Planting continues and in places has extended west of the watershed. In parts of the Cowal peninsulas re-afforestation was proceeding by the 1960s. The eastern half of the Dunoon peninsula has been heavily affected and hill sheep farms taken over also in the Ardlamont and Strone areas. In Cowal disturbance to the land through forestry seems likely to have had greater impact than the agricultural improvements. In all these areas undetected archaeological remains have been endangered, but the need for systematic advance survey work has rarely been met. A detailed programme, such as that recently initiated by Mercer (1976, 1978) on Arran, is exceptional, but the findings illustrate the possible scale of the losses to the archaeological record which may have taken place.

### 3.6.2 The Archaeological Record

The increased threat to archaeological remains came at the turning point in the theoretical development of archaeology which was discussed



above (1.2.1). It was some time however before the growing emphasis which the New Archaeology of the 1960's came to place on examining sites and monuments as inter-related features of prehistoric landscapes affected work in the field. The time-lag was critical in view of the major re-afforestation programmes especially as survey work remained incomplete in much of the country. The Edinburgh branch of the Archaeology Division of the Ordnance Survey, established in 1958, and the other public bodies involved - the Royal Commission for Ancient and Historical Monuments and the Scottish Development Department (Ancient Monuments) - faced a daunting task (Seymour 1980, 342). Quite recently Proudfoot stressed that the assembling of 'as complete a data base as may still be available to us today' remains an urgent and formidable problem (1982, 1).

Syntheses of Scottish material, relevant to this study, produced since 1955 include Henshall's inventory and discussion of chambered cairns (1963; 1972) and Coles' treatment of early Bronze Age metalwork (1969). In 1962 Piggott edited The Prehistoric Peoples of Scotland - the first reappraisal of Scottish prehistory since Childe's. This has been a period of increasing popular interest in archaeology.

The difficulties in responding to the threats to archaeological remains are clearly seen within the area of study (tables 3.1-4). For most of the area the Ordnance Survey cards remain a valuable record. In 1971 the Royal Commission published the Inventory of the Ancient Monuments of Kintyre (RCAHMS 1971). This is the only part of the area of study for which this comprehensive record is available, although listings of archaeological sites and monuments for South Carrick, North Carrick and North Kyle have been published at the time of writing - part of a programme of regional surveys of rural areas under threat, sponsored by



the Society of Antiquaries of Scotland (RCAHMS 1981, 1983, 1985). Surveys made by individuals and local bodies include cup-and-ring marked rocks in south-west Scotland (Morris and Bailey 1966, Morris 1968), monuments in Cowal (Paterson 1970) and Renfrewshire (Newall 1974; 1976).

Mercer's 'rescue' survey (1976, 1978), mentioned above, covered four blocks of land on the valley sides and hill slopes around Blackwaterfoot, Machrie Moor and Auchagallon, in an area of west Arran scheduled for forestry planting. Numerous features were recorded, including areas of prehistoric settlement. Subsequently a range of monument types was excavated by the Central Excavation Unit (Barber 1982, Barber 1980 and forthcoming), and surveys and monitoring during forestry ploughing brought further sites to light, especially under peat, indicating that the area may have been more densely settled in prehistoric times than the preliminary survey had suggested. The importance of the palaeobotanical work undertaken as part of this research (Robinson 1981) has already been mentioned (1.1). In addition there has been recent work at Moss Farm Road cairn (AR 12) and at two of the stone circles on Arran (AR 1, 11), one of these being recently discovered beneath peat (Burl 1980b). Further work has been carried out by Haggarty (1985, 1986). Earlier investigations on Arran were of the untouched forecourt deposits at Monamore chambered cairn (ARN 9) (AR 58) (MacKie 1964) and of cists, one found in deep ploughing at Brodick Castle deer park (AR 78) (Fairhurst 1981, 29, Fairhurst et al. forthcoming). An official guide to certain monuments was published in 1977 (McLellan) and a more comprehensive book for visitors and residents by Fairhurst (1981). A Museum and Heritage Centre has been established at Brodick, the first such provision on the island.

This is in keeping with a trend to local initiative noted elsewhere.

On Great Cumbrae a Museum of the Isles has been established at Millport (Gordon 1979), and on Bute local activity has been maintained, and has included investigations on Inchmarnock (Marshall 1963) as well as major excavations at Hilton (BU 43) and Glenvoidean (BUT 1) (BU 2) cairns (Marshall et al. 1976; Marshall and Taylor 1977). In Kintyre excavation has been important - especially for this study the investigations by Scott of the chambered cairns of Brackley (ARG 28) (KT 76), Beacharra (ARG 27) (KT 13) and Ardnacross 2 (ARG 35) (KT 69) (1956; 1964; RCAHMS 1971, 31), which contributed substantially to his synthesis of 'Clyde' cairns (1969). There has also been the re-examination of Balnabraid cairn (KT 57) by Ritchie (1967). The Cowal Archaeological Society has been formed and has been active in recording sites and providing information for visitors (Paterson 1970). A 'rescue' excavation was mounted in 1975 of a cairn at Portavadie (CO 6) in advance of the construction of an oil platform site (Marshall 1975). In Renfrewshire surveys by local enthusiasts were initiated and prehistoric sites recorded in a local journal (Newall 1974; 1976). The Ayrshire Archaeological and Natural History Society was re-established in 1947. Among the Collections produced was a recent synthesis of the Bronze Age in Ayrshire (Morrison 1978). As we have seen (1.2.6), a series of artefact inventories for south-west mainland Scotland was published in the Transactions of the Dumfries and Galloway Natural History and Antiquarian Society. There has been excavation of several Bronze Age burial sites: Coalpots Road, Girvan (AY 104), Doonfoot, Ayr (AY 73) and Carwinning, Dalry (AY 23) (MacKie 1966, Davidson 1967, Cowie 1979).

The first regional text on the archaeology of south-west Scotland was produced (Scott 1966).



### 3.7 Resumé and Conclusion

This historical review of social and economic development and antiquarian activity has provided insights into the archaeological record as contained in the data file for this study. The particular patterns suggested within the area of study will be important to the analysis of location factors and interpretation of distributions of monuments and artefacts in chapters 5, 6, 7 and 8, and will also provide guidelines for future research in the area. The main points may be summarised as follows.

Arran began to be a focus of interest in archaeology from the initiation of an archaeological record in the west of Scotland. The lateness and restriction of agricultural reform and the absence of industrial development might suggest preservation and recording of monuments. However it should be remembered that awareness of the needs for survey, conservation and recording did not develop effectively until later in the nineteenth century. Once modern transport was available Arran's monuments were promoted as a tourist attraction, and its reputation as 'a place for monuments' may have contributed to its being chosen for excavation in the 1860's. A major programme of excavation and survey took place in the late nineteenth and early twentieth centuries. Although there was some spin-off in stimulating interest and excavation in Bute and Kintyre, Arran has received, as it still does, more attention from archaeologists. This is illustrated in the fact that Machrie Moor and its surroundings are the only parts of the area of study in which a detailed survey has been carried out in advance of re-afforestation.

Kintyre, which might have seemed to offer similar potential to



visiting archaeologists in the nineteenth and early twentieth centuries seems to have lacked appeal, and for a long time relied mainly on local enthusiasm and resources. More recently important excavations have been carried out to post-war standards and the archaeological record has been collated in the Inventory prepared by the Royal Commission (RCAHMS 1971).

In the Cowal peninsulas archaeology remained largely neglected until after World War II when local interest in recording and excavation began.

Bute has shown ongoing, consistent local interest in archaeology since early in the nineteenth century, so that although monuments seem to have been damaged or destroyed in the fairly extensive agricultural improvements, some were recorded from an early date. Once established, activity, local and national, has been maintained and there have been recent major excavations.

In the Cumbraes occasional activity was begun from the second half of the nineteenth century and was supported by Glasgow.

There seems to have been little incentive for interest in archaeology in the part of Renfrewshire within the area of study, and the record remains blank from the finding of the Gavel Moss bronze hoard (AY 8), unearthed in ploughing in 1790 (Coles 1969, 107), until the evidence for prehistoric activity discovered in recent years..

The concentration in Ayrshire in the late nineteenth century on collection of artefacts stands in marked contrast with the work in the field elsewhere. It is however precisely what might be expected in an area where major capital investment in agriculture and other development began at an early date and moved ahead rapidly. Small finds and cist and urn burial sites, concealed below the ground, will be discovered. Cairns and mounds in the path of improvement are likely to be robbed or

destroyed, although we should not underestimate the particular difficulty of removing megalithic chambered cairns without modern equipment.

Insight can also be gained from study of its formation into the quality of the archaeological record. One important factor here is the variation in complexity of individual records. The earliest are simple accounts, sometimes at second hand. They date from a time when investigations of cairns were considered in terms of opening and digging out the contents, and reports of burials were confined to noting the presence of skeletal material with 'urns'. The latest are reports of recent excavations to modern standards, accompanied by specialist reports. The majority fall between these two extremes, for, as we have seen, a formative period for the archaeological record was the late nineteenth and earlier twentieth centuries (tables 3.1-4). Understanding the range of records involved and the limitations which this imposes is a necessary guide to appropriate research. Another aspect is the adventitious nature of much of an archaeological record in which agricultural and other developments have played a part in the discovery of sites and finds as well as in their destruction. For the study area this has been exacerbated by the absence of field surveys in advance of development. The main industrial and agricultural land use patterns were already in place before the active period in archaeology began in the later nineteenth century (tables 3.1-4). In more recent times it has proved equally difficult to forestall the threat to the archaeological record from large-scale forestry and other programmes often affecting areas of peat previously undisturbed, in which, as we have seen (2.4.4), prehistoric landscapes for our period may be preserved.



## CHAPTER 4

### DATA FILE AND COMPUTER PROGRAMMES

#### 4.1 Introduction

This chapter concerns the design and preparation of computer data files and computer programmes. It covers in short compass a substantial area of the work, and one in which methods were developed specifically with the requirements of the research in view (1.3). The resulting data files and computer programmes form the basis for the quantitative analyses which are the subject of chapter 5.

#### 4.2 Computer Data Files

##### 4.2.1 Advantages

The use of computer data files for this research project offers two major advantages. In the first place the files can be easily modified, simplifying the task of assembling a data base containing details on a large number of sites (table 4.1). Secondly, a fast and accurate search can be made of the extensive data base. There is in addition the possibility that by transferring the file to magnetic tape the data base may be moved between computers. Moreover by developing a data file tailored to the specific needs of the research it is possible not only to integrate the full range of evidence under consideration, but to combine the needs of information retrieval and data manipulation for statistical



analysis with the output of printed text in a form appropriate to the Catalogue of Sites.

#### 4.2.2 Design

A design was developed which allows total flexibility in choices of variables examined singly, in combination or as alternatives. No limitations were imposed in selecting the data in groups or categories. This file design has also allowed programmes to be prepared to suit the particular requirements of the research, for example distributions of sites can be plotted directly from the data file using an analogue technique with prepared map outlines along with the computer capacity for fast search of the data file, allowing the production of a range of draft maps. Histograms of quantitative features or a correlation matrix can also be produced directly from the data file.

#### 4.2.3 Contents

##### Data File of Sites

As will be seen from the Catalogue of Sites, Appendix 1, the data file has been arranged in sections comprising different parts of the study area. This allows comparisons between selected parts of the region as well as an overall view. Table 4.1 shows the number of sites entered in the file for these sub-regions of the study area. The variability in content and quality of the archaeological records through time has already been discussed (chapter 3), and this has posed problems in determining criteria for inclusion of sites. In general the policy has been to

include in the data file sites about which there is sufficient information to indicate their nature and artefacts which exist or which are documented, although some sites have been included under the entry 'site details uncertain'. These are included only in the 'all sites' analysis (chapter 5) and do not appear in the 'monument groups'. Inevitably decisions have been a matter of personal judgement and the data file is in no way intended to be regarded as a complete corpus of all possible sites, but rather a catalogue of those about which enough is known to be viable for the research envisaged. As far as possible all the available data concerning a site has been included. In some cases, therefore, the range of information available extended beyond what was required for this project, and the file could be a useful source of data for future work, for which it could be readily updated. The file is based on published information up to the end of 1984.

Sites are listed by grid reference, Ordnance Survey index card number, name and location. Coded information sections follow. Primary level information, as known from the archaeological record, is coded according to:

- type of site
- structural features
- details of finds
- details of burials
- other evidence

Classifications used and their sources are detailed in the notes which accompany the Catalogue of Sites (Appendix 1). A set of locational factors has also been coded for each site whose location is known to a precision of 100 m. on each axis. Of these most could be accurately

determined:

height above sea level

distance from the sea

solid or drift geology

present soil

present land use

aspect

presence or absence of fresh water in vicinity

Ratings were also made on

prominence

accessibility

For most sites present land use, prominence and accessibility were decided in the field as observed under present conditions. Ratings on prominence and accessibility remain subjective assessments. Sources of this information and criteria used are also given in the notes to Appendix 1. A text section follows the coded parameters for each site. This comprises the information in a form suitable for the Catalogue of Sites. Museum information and selected references are included. In view of the possibility of updating the data file, sites were only coded and numbered in the output for the catalogue.

#### Listing of Stone Axeheads (Appendix 2)

A separate listing of stone axeheads found within the area of study was also made, when it became clear, as the work progressed, that the distribution of stone axeheads could provide additional evidence in assessment of the level of Neolithic activity throughout the study area. The format of this file follows the same principles as the Catalogue of Sites and explanatory notes are also provided.



### 4.3 Associated Computer Programmes

The following programmes have been developed to suit the requirements of the research project. Flow diagrams illustrating the working of the programmes are given in figures 4.1-4.4.

#### 4.3.1 PROG FORTRAN

PROG FORTRAN carries out a fast search and selection from the data file, and produces a list of sites with a required variable or group of variables.

#### 4.3.2 PLOT FORTRAN

PLOT FORTRAN selects sites from the data file in the same way as PROG FORTRAN and plots their positions on a prepared map. This combines the use of an analogue technique for the map outline along with the computer capacity for fast search.

#### 4.3.3 MATR FORTRAN

MATR FORTRAN carries out a search of the data file for selected groups of variables and produces a correlation matrix showing the observed number of occurrences of two variables. While this is its main function, MATR FORTRAN can also give a statistical evaluation of the correlations - presence or absence of significant relationships - directly

from the data file, based on the expected random number and the number of standard deviations by which the observed and the random values differ. In calculating the random correlation the actual number of occurrences of each variable is used. The probability of the occurrence of any single variable is not assessed.

#### 4.3.4 DISALT FORTRAN

DISALT FORTRAN incorporates a package programme 'SIMPLEPLOT'. Quantitative features such as height above sea level or distance from the sea are examined for all sites for which this information is available, or for selected groups of sites and a histogram produced directly from the data file.

## CHAPTER 5

### DATA FILE ANALYSIS

#### 5.1 Introduction

In this chapter the results of statistical analysis of information concerning the location of sites in the area of study are presented. The following location factors were considered:

altitude

distance from the sea

solid or drift geology

present soils

present land use

aspect

These were recorded using the sources and criteria already described (4.1.3, Notes to Appendix 1) for all sites in the data file whose location is known (the degree of exactitude accepted has already been given above 4.1.3). The subjective ratings on accessibility and prominence were also examined. Although it is clear that these factors are not all independent, nevertheless a significant dependence of the distribution on a particular factor will normally be evident since the relationship between different factors, if any, is not unique.

The analysis was designed to examine the area of study both as a whole - at regional level - and at the level of the different sub-regions as was mentioned above (4.1.3). These are:

the mainland area of Ayrshire and Renfrewshire



the Kintyre peninsula

the Cowal peninsula

the island of Arran

the island of Bute

the small islands - Gigha, Inchmarnock and the Cumbraes

That this approach is important was suggested in chapter 1, and has been borne out as the data file was completed and differences in the number of sites recorded throughout the area of study could be documented (table 4.1). Within this broad framework, studies of the following monument groups were undertaken:

Neolithic chambered cairns

stone circles and settings

standing stones and stone rows

Bronze Age burial cairns

unmarked Bronze Age burial sites

cup-marked rocks

Table 5.1 shows the numbers of monuments of these different kinds for the area of study as a whole and for the sub-regions, and the data file numbers of the sites are listed in Appendix 1. Table 5.1 also gives the density of each kind of monument in each of the sub-regions, and the number which would be expected were the monuments of each group distributed uniformly over the area of study.

In chapter 8 the results presented in this chapter will be brought together with the findings relevant to each monument group from study of maps of their spatial distribution, the formation of the archaeological record (chapter 3), the historical and regional perspectives (chapter 6) and the chronology and contexts of artefacts (chapter 7), and there will

be a detailed discussion and synthesis of the Neolithic and early Bronze Age periods structured around these monuments as type sites. It should be noted here that for composite sites (e.g. cairn and standing stone) type monuments are counted separately in view of the possibility of separation in time and independent motivation, a point to which we will return in chapter 8.

In order to investigate possible associations or exclusions between sites and the location factors, the observed locational inter-relationships are compared with those which would be expected if the sites were uniformly distributed over the land area with no specific relationship to the location factor under consideration. The difference between such a uniform distribution and that observed is calculated in terms of  $\chi^2$

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

(O = observed numbers and E = expected numbers). The quantity  $\chi^2/\text{degree of freedom}$  ( $\chi^2/\text{d.o.f.}$ ) is used as a measure of the agreement of the data with a uniform distribution of sites within the region of the study area or the sub-region under consideration. The results of such tests are taken as a guide or indication rather than a quantitatively significant measure on which definitive conclusions may be based, especially when the total number of sites of a particular kind in any given area is small. Nevertheless the analysis will provide a basis for interpretation of locational inter-relationships more rigorous than a purely qualitative approach. The results show that analysis only at the regional level would indeed be misleading for several of the location factors.

The analysis of sites in relation to altitude and distance from the sea (5.2) thus tests the null hypothesis that there is no significant

relationship between altitude or distance from the sea and the position of sites. The distribution of sites was examined first at the regional level with a view to providing indications about Neolithic and early Bronze Age activity within the region. Sites within each of the sub-regions were then examined in relation to the area and topography of the sub-region in question. There follows an examination of the distribution of the monument groups in relation to altitude and distance from the sea for the region as a whole.

The analysis of sites in relation to the other location factors in sections 5.3-5.6 tests the following null hypotheses: that there is no significant relationship between geology and the position of sites (5.3); that there is no significant relationship between present soils and the position of sites (5.4); that there is no significant relationship between present land use and the position of sites (5.5); that there is no significant relationship between aspect and the position of sites (5.6). The procedure has been to examine first the distribution of sites in relation to the various factors at the regional level. This is followed by a similar analysis at regional level for the monument groups. The investigation is completed by analysis for the monument groups of each sub-region. As before the comparison here has been with the expectations generated for the sub-region in question.

## 5.2 Sites and Altitude, Sites and Distance from the Sea, Accessibility

### 5.2.1 Analysis - Altitude

The data file information on altitude was taken from the O.S. map,



1:50,000 (first series), estimated to the nearest metre.

Histograms (fig. 5.1 and figs. 5.2-5.14) were plotted using a package programme 'Simpleplot' incorporated into the programme DISALT FORTRAN described above (4.3.4).

The distributions in altitude of sites uniformly distributed over the region and the sub-regions were calculated by measuring the areas of land at different altitudes using a planimeter. This ensured an accurate measurement of land blocks in an area of study with much short-range altitudinal diversity. Land blocks measured were the following: 0-30 m., 30-76 m., 76-229 m., 229-381 m., 381-533 m., 533-687 m., > 687 m., intervals which correspond to convenient contours on the O.S. map, and which also give more similar areas of land in each band than would have resulted from choosing equal intervals of height. The proportions of the areas as a function of altitude were thus obtained, both for the region and for each sub-region. The resulting proportions have been applied to each histogram after normalisation to the appropriate number of sites.

### 5.2.2 Results - All Sites

For sites uniformly distributed in the region the average altitude would be 228.2 m. which should be compared with the actual average of 82.0 m. It may also be seen from fig. 5.1 that the location of sites within the region is markedly biased towards lowland areas compared with what would be expected were the sites uniformly distributed. The number of sites plotted against altitude within the sub-regions, shown in figures 5.3-5.8, reflects the general bias towards a lowland distribution, but the

following points may be noted. In Ayrshire and Renfrewshire (fig. 5.3), the largest land mass in the area of study (table 4.1), comparison with a uniform distribution shows that there are more sites than would be expected at altitudes below 50 m. and fewer at altitudes above 250 m. In Kintyre (fig. 5.4) the peak below 25 m. is less marked than elsewhere, and the increased number of sites at low altitudes occurs below 75 m. There are some more sites than would be expected between 100 and 175 m., due probably, as we will see below, to the large number of cup-marked rocks. In Kintyre fewer sites occur than would be expected at altitudes above 175 m. and on Arran (fig. 5.6) at altitudes above 150 m.

### 5.2.3 Results - Monument Groups

In general the histograms (figs. 5.9-5.14) reflect the pattern of lowland distribution, but the following points may be noted. The histogram of altitude of Neolithic chambered cairns (fig. 5.9) suggests a second peak between 125 and 175 m., not accounted for by the corresponding area of land, indicating a more upland as well as a lowland concentration. Stone circles (fig. 5.10) appear less common at altitudes below 25 m. than do standing stones or burial monuments. The histogram of altitude for cup-marked rocks (fig. 5.14) follows a pattern different from that of the other monument groups examined, and one which shows a more upland concentration.

### 5.2.4 Analysis - Distance from the Sea

The distance from the sea was measured directly from the O.S. map to

the nearest coastline, correct to the nearest 0.1 km. No account was taken of intervening topographic features in view of the difficulty of determining likely routes.

Histograms (fig. 5.1 and figs. 5.2-5.14) were plotted using a package programme 'Simpleplot' incorporated into the programme DISALT FORTRAN as described above.

The distributions of distance to the coast for sites uniformly distributed over the region and the sub-regions were calculated by measuring total areas in linear bands of 0.5 km. width working from the coast inland, a method of measurement which takes account of the intricate nature of a coastline which includes many narrow promontories and islands. The proportions of the areas as a function of distance from the sea were thus obtained both for the region and the sub-regions. The resulting proportions have been applied to each histogram after normalisation to the appropriate number of sites.

#### 5.2.5 Results - All Sites

For sites uniformly distributed in the region the average distance from the sea would be 11.06 km, whereas the actual average is 4.1 km. It will also be seen from fig. 5.1 that the location of sites within the region is markedly biased towards coastal areas compared with what would be expected were sites uniformly distributed. The number of sites plotted against distance from the sea within the sub-regions is shown in figs. 5.3-5.8. The results reflect the general bias towards a coastal distribution, but it may be noted that in Ayrshire and Renfrewshire there is a somewhat larger number of sites than would be expected between 31 and



39 km. from the coast in addition to the peak in the coastal zone within 2 km. from the sea.

#### 5.2.6 Results - Monument Groups

In general the histograms (figs. 5.9-5.14) reflect the bias towards a coastal distribution. This is very evident for all the monument groups, and the occurrence of standing stones and Bronze Age cairns in locations very near the coast is very marked.

#### 5.2.7 Discussion

It has been found that the location of sites in the region is markedly biased towards both coastal and lowland areas compared with what would be expected were sites uniformly distributed. Since the low lying ground is predominantly near the coast and the higher ground mainly inland these two characteristics are not independent, and it is not obvious from the one dimensional distributions whether either is the determining factor. The two dimensional scatter plot shown in fig. 5.2 suggests that proximity to the coast was particularly important, while the very high density cluster at both very low altitudes and small distances from the coast is particularly marked. This plot does not of course indicate the effect of the topography on the actual areas as a function of altitude and proximity to the sea.

#### 5.2.8 Accessibility Ratings

Accessibility of sites is likely to be closely related to altitude and distance from the sea. Two options were allowed as defined in the Notes to Appendix 1 - accessible and inaccessible. Table 5.2 shows the numbers of sites within the region assigned to each category. If it is assumed that it was always possible to make the choice between an accessible or an inaccessible location, the results suggest that accessible locations were favoured. The results of the correlation matrix prepared using the programme MATR FORTRAN to analyse the ratings for the monument groups are shown in table 5.3. This matrix includes the calculation of the significance as detailed in section 4.3.3. In general the relative accessibility of the different kinds of monument shows little significant variation from the expected values. However two points are perhaps worth noting. Bronze Age burials apparently unmarked occur in inaccessible positions much less frequently than would be expected were the sites randomly distributed. On the other hand cup-marked rocks occur in inaccessible locations somewhat more frequently than would be expected were the sites randomly distributed.

#### 5.2.9 Summary and Conclusion

The analysis of altitude and distance from the sea suggests that sites recorded in the data file have a predominantly coastal and lowland distribution, and this is supported from consideration of accessibility ratings. In the larger land mass of Ayrshire and Renfrewshire there is less evidence of activity at a distance from the coast. Study of the monument groups suggests that Neolithic cairns occur in upland as well as in lowland areas. Cup-marked rocks appear to have a distinctive upland

distribution and often occur in inaccessible locations, whereas unmarked Bronze Age burial sites are rarely recorded in inaccessible positions.

An important factor in considering these results will be the disturbance to the lowland and coastal areas through agricultural improvement and social and economic development during the formation of the archaeological record (chapter 3). The points made by Stevenson (1975) that such areas are likely to be a zone of destruction for certain classes of evidence but an area of discovery for others will be considered throughout chapter 8.

### 5.3 Sites and Solid and Drift Geology

#### 5.3.1 Analysis

The solid or drift geology was determined for all the site entries in the data file whose exact location is known using the O.S. Solid and Drift Geological Maps available for the area of study (1" = 1 mile). Thirteen categories were considered as listed in the Notes to Appendix 1 and in Table 5.4. A map of the geology of the area of study is shown in fig. 2.2 a,b. The programme MATR FORTRAN (4.3.3) was then used to determine the observed numbers of sites recorded in each category for all sites and for the monument groups, both for the region and for the sub-regions of the area of study.

The areas of land in each category were determined for the region and for the sub-regions (tables 5.4, 5.5) by sampling using a uniform grid, and expected frequencies calculated. The observed and expected frequencies were compared using the quantities  $\chi^2$  and  $\chi^2/\text{d.o.f.}$  as



described above (5.1).

### 5.3.2 Results - All Sites

The results of the analysis for all sites in the data file whose location is known are shown in table 5.5. The high value of the  $\chi^2/\text{d.o.f.}$  shows clearly that the distribution is far from uniform. Examination of the  $\chi^2$  values suggests that, at the regional level the following points are important.

#### Solid Geology

More sites than would be expected occur on the schists and phyllites of the Dalradian assemblage, and also on the Dalradian metamorphic limestones, green beds and epidiorite and hornblende schists, although the numbers here are so small that they may not be statistically significant. More sites than would be expected also occur both on Old Red Sandstone and on New Red Sandstone sediments, with the latter being particularly marked. There are some more sites than would be expected on igneous rocks. Fewer sites than would be expected occur on Ordovician and Silurian rocks and on the lavas of Ordovician, Carboniferous and Permian age.

#### Drift Geology

The most striking feature here is that more sites occur than would be expected on raised beach deposits, and markedly fewer on boulder clay and other glacial deposits and on peat. This last feature is noted here, but will be discussed more fully in section 5.4 - Sites and Soils - where the extensive areas of blanket peat (< 1 m. in depth) are taken into account as well as the deeper basin and valley peats recorded here.

### 5.3.3 Results - Monument Groups

The results at regional level are shown in table 5.6/. Again the value of the  $\chi^2/\text{d.o.f.}$  is high, and the general trends noticed above are repeated. However examination of the analysis for the different kinds of monument is instructive. Cup-marked rocks make the major contribution to the larger number of monuments than would be expected which occur on Dalradian schists and phyllites. The larger number of monuments than would be expected on New Red Sandstone sediments arises mainly from Neolithic cairns and stone circles. Neolithic cairns along with stone circles, standing stones and Bronze Age cairns, also contribute to the larger numbers of monuments than would be expected which occur on intrusive igneous rocks. The larger number of monuments than would be expected on raised beach deposits includes all the monument groups, with the exception of cup-marked rocks, but is most marked for standing stones, Bronze Age cairns and mounds and unmarked Bronze Age burial sites. On glacial deposits there is a shortfall compared with the expected numbers for all the monument groups.

The breakdown of the analysis for the monument groups into the sub-regions of the area of study is shown in tables 5.7 - 5.12. It will be seen that on Bute (table 5.11) the low value of the  $\chi^2/\text{d.o.f.}$  indicates that the distribution is near to uniform, and that, unlike other sub-regions, the location of sites has no particular relation to the solid or drift geology, although there are rather more monuments than would be expected on Old Red Sandstone sediments and on raised beach deposits. The agreement with a uniform expectation is also good in Kintyre, where the exceptional feature is the much larger number than expected of cup-marked

rocks on Dalradian schists. The numbers of monuments occurring on igneous rocks and on raised beach and alluvial deposits is also rather greater than expected. In Cowal, although numbers are small, the agreement with a uniform distribution is very poor ( $\chi^2/\text{d.o.f.} = 5.6$ ) (table 5.9), with fewer monuments than expected on the Dalradian rocks and more on raised beach deposits. A larger number of monuments on the raised beach than would be expected may also be noted in the small islands, but again numbers may be too small to be statistically significant.

For Ayrshire and Renfrewshire (table 5.7) and Arran (table 5.10) the agreement with a uniform distribution is very poor. Ayrshire, the only part of the area of study in which the Ordovician and Silurian rocks of the Southern Uplands occur, makes the total contribution to the shortfall compared to expectation of sites on these rocks. However, with the numbers of sites per square kilometre in Ayrshire low (tables 4.1, 5.1), the breakdown of the analysis puts this feature into perspective compared with its prominence at the regional level. Ayrshire also makes a major contribution to the larger number of monuments than would be expected which occur on igneous rocks, for on Arran, where the percentage of igneous rocks is highest within the area of study (table 5.4), only Neolithic cairns reach the expected numbers, and overall there are fewer than expected. The igneous rock here however includes the large masses of intrusive granite present in the mountainous north of the island, and it should be noted that 10 of the 11 monuments recorded on igneous rock on Arran lie on minor igneous intrusions - the dykes and sills prominent in the landscape of the south of the island (2.3.3). In Ayrshire the 13 sites recorded on igneous rock occur on more major igneous features. It is Arran, which also has by far the highest percentage of New Red



Sandstone within the area of study (table 5.4), that makes the contribution to the larger numbers of monuments than would be expected on these Permian and Triassic sedimentary rocks. The monuments involved here in particular are Neolithic cairns and stone circles.

The larger number than expected of monuments occurring on raised beach deposits is very marked both for Arran and for Ayrshire and Renfrewshire. In Arran all the monument groups are included except cup-marked rocks, but in Ayrshire and Renfrewshire unmarked Bronze Age burial sites predominate, although more standing stones than would be expected also occur. In Kintyre and Bute, where observed numbers of monuments on raised beach locations are closer to the expected, the small increases in numbers over those expected are more evenly spread. In Cowal and the small islands, although the numbers of monuments are small, the analysis suggests that standing stones, Bronze Age cairns and unmarked Bronze Age burial sites are associated with raised beach deposits.

Both Arran and Ayrshire and Renfrewshire contribute to the occurrence of fewer sites than would be expected on boulder clay and other glacial deposits. This applies to all the monument groups, but on Arran there are noticeably fewer Neolithic cairns on boulder clay than would be expected. This is in agreement with the findings of Davies (1946), although here observation during recording suggested that Neolithic cairns often occur very near the boundary of the boulder clay with other deposits.

#### 5.3.4 Summary and Conclusion

Consideration of the findings discussed above suggests that it is difficult to establish the extent to which differences in solid geology

were important in monument location. Several instances illustrate the problem. For example, the distribution of cup-marked rocks (fig. 8.9) suggests that the northern fringes of the area of study were particularly favoured, and it is here that the Dalradian schists on which cup-marks are most frequently found are concentrated (table 5.1). Thus the reason for the association of cup-marked rocks with Dalradian schists is not clear. This point is further discussed in chapter 8. The larger number of monuments than would be expected on the metamorphic limestones, greenbeds and epidiorite schists of the Dalradian assemblage may suggest favouring of areas where these rocks enrich the soil (2.3.2). However, as noted above, the numbers here are small. By far the majority of monuments on New Red Sandstone sediments are located on Arran. However, there are no other comparable areas of New Red Sandstone within the area of study, although here it may be mentioned that few monuments are recorded on the smaller area of Permian sediments which occurs in Ayrshire around Tarbolton. The Ordovician and Silurian rocks and the lavas of Ordovician, Carboniferous and Permian Age, on which there are fewer sites than would be expected, occur only in Ayrshire and Renfrewshire - the areas with the lowest number of monuments per square kilometre (tables 4.1, 5.1). Here again comparison with other parts of the area of study is not possible.

One other point concerning the relationship of monuments to solid geology may be noted. The analysis suggests that the occurrence of solid rock was important in the positioning of some monuments, notably the cup-marks discussed above and Neolithic cairns. Neolithic cairns were found to be preferentially associated with Dalradian schists, New Red Sandstones and intrusive igneous rocks (table 5.6). Their location on

minor igneous intrusions on Arran has already been noted. These findings are in keeping with Perry's conclusion (1984, 231-2) for Arran 'that most of the cairns are located on or very close to an outcrop of bedrock'. Both stone circles and Bronze Age cairns were also found to have some association with igneous intrusions. The association of stone circles with New Red Sandstones arises from the group of monuments which occupy a boss of these sediments on Machrie Moor, Arran (table 5.10). Standing stones were found to be associated with Dalradian schists in Kintyre (table 5.8).

The analysis of the relationship of monuments to drift deposits is more conclusive. Three important points emerge here - a preferential association of monuments with raised beach deposits, and markedly lower numbers of monuments than would be expected on glacial deposits and in areas of peat. The association with raised beach deposits is closely in keeping with the findings above (5.2) that sites are predominantly near the coast and at low altitudes, and the comments made (5.2.9) concerning areas of discovery and destruction remain relevant, for, as has been seen in chapter 3, raised beaches have been a particular focus of agriculture and development in recent times. The analysis confirms that monuments are not associated with glacial deposits, as was recognised by Davies for megalithic monuments on Arran (1946). Davies included in her study 'Clyde' cairns, some other cairns, stone circles and standing stones. Her suggestion can now be extended to a more comprehensive range of monuments of the Neolithic and early Bronze Age in the area of study. The shortfall compared with expected numbers of sites on peat, as noted above, will be discussed in the section which follows.



## 5.4 Sites and Soils

### 5.4.1 Analysis

In recording present-day soil types for the site entries in the data file nine types of soil were considered along with a tenth category - built up areas. These were established for the area of study by generalisation from the map of soil associations and their component soils - the Soil Map of South West Scotland (1:250,000) (Sheet 6) (The Macaulay Institute for Soil Research, Aberdeen, 1982). In order to show the areas of land of each soil category for the area of study a map was prepared at 1:250,000 which was the basis of the map shown in fig. 2.4; but it should be noted that it is difficult to bring out the smaller pockets at the reduced scale. The programme MATR FORTRAN was used to determine the observed numbers of sites recorded in each category for all sites with an exact location and for the monument groups, both for the region of the study area as a whole and for the sub-regions.

The areas of land of each category were determined for the region as a whole and for the sub-regions by sampling on a uniform grid using the same generalisations (tables 5.13, 5.14), and expected frequencies calculated. The observed and expected frequencies were then compared using the quantity  $\chi^2/\text{d.o.f.}$

### 5.4.2 Results - All Sites

The results of the analysis for all sites in the data file whose location is known are shown in table 5.14. The high value of the

$\chi^2/\text{d.o.f.}$  shows that agreement with a uniform distribution is very poor. Examination of the  $\chi^2$  values suggests that at regional level the following points are important. Most striking is the markedly larger number of monuments over the expected numbers in areas of present humus-iron podzols. On the other hand at the regional level fewer monuments occur on brown forest soils than would be expected. However, as we will see below, this finding reflects very marked differences in percentages of brown forest soil within the study area (table 5.13), along with the different levels of site density (tables 4.1, 5.1). The shortfall in numbers, compared with those expected, of monuments in areas presently under peat is marked. As noted above areas of the shallower blanket peat are included here as well as the deep basin and valley peats mentioned above. The number of monuments located in areas presently built up is also very much greater than expected. This point will be taken up in the discussion of sites and present land use below (5.5).

#### 5.4.3 Results - Monument Groups

At the regional level the agreement with a uniform distribution is again very poor, with findings in keeping with those outlined above (table 5.15).

The breakdown of the analysis for the monument groups into the sub-regions of the area of study, shown in tables 5.16 - 5.21, is more informative. Here it is seen that the overall fit for Bute is excellent, although this is of limited significance because the numbers of sites are small. In Kintyre, Cowal and Bute (tables 5.17, 5.18, 5.20) it will be seen that the findings show no significant relationship between monuments

and brown forest soils. In Arran (table 5.19) numbers are slightly higher than would be expected. This may also be true for the small islands, although in this case the number of sites is small, and the findings may not be statistically significant. In Ayrshire and Renfrewshire (table 5.16) the number of monuments on brown forest soils is near expected values. However, in Ayrshire and Renfrewshire, the largest of the sub-regions in the area of study, brown forest soils make up 42% of the soil distribution (table 5.13), thus making the main contribution to the 29.8% of the total for the area of study as a whole. At the same time the number of sites per square kilometre in Ayrshire and Renfrewshire is low (tables 4.1, 5.1), thus creating an apparent shortfall in numbers of sites on brown forest soils compared with the expected numbers in the analysis at regional level, whereas in fact such a shortfall is not significant.

In Kintyre it is noticeable that the number of standing stones on present non-calcareous gley soils is larger than expected. Bronze Age cairns and cup-marked rocks also occur in numbers larger than expected on these soils. On present peaty gleys however numbers of standing stones, Bronze Age cairns and unmarked burial sites are smaller than would be expected. The latter effect can also be seen on Arran for Neolithic cairns, stone circles and Bronze Age cairns. However, as we have noted (2.4.5), it may be that this distinction of the gley soils has been increased through modern farming so that it might be mistaken to attach too much significance to these findings. The possible greater extent of peaty gley soils in prehistoric times around East Bennan chambered cairn on Arran is discussed by Davidson (1983). The occurrence of monuments of all kinds in numbers larger than expected on humus-iron podzols is the dominant feature on Arran (table 5.19). This feature is noticeable widely



in the island and peninsula zone of the area of study, being apparent in Kintyre and Bute (tables 5.17, 5.20) and perhaps also indicated for Cowal (table 5.18), although here numbers of monuments are small, as has already been noted.

#### 5.4.4 Summary and Conclusion

As was already suggested (2.4.5), many difficulties surround the interpretation of sites in relation to the distribution of soils at the present day in view of the changes likely to have taken place. It is also important that short-range variation - a prominent feature of the present distribution of soils in highland and island areas (Bown et al. 1982, 11) - will not be fully represented in a generalised study such as has been undertaken here. In these circumstances the results of the analysis must be treated with caution in making suggestions about prehistoric activity. The gley soils discussed above are a particular example.

However the following conclusions can be made. It has been shown that there are markedly fewer sites than would be expected from a uniform distribution in areas presently under peat, strengthening the suggestion made (2.4.5) and discussed further (3.6.1) that these are areas where sites may not have been discovered. The few monuments which are recorded here or on peaty podzol are in general upstanding monuments, for example Neolithic cairns, stone circles or standing stones and Bronze Age cairns. On Arran Neolithic cairns and stone circles occur in slightly higher numbers on peaty podzols than would be expected (table 5.19).

The most significant factor to emerge from the analysis is that the numbers of monuments recorded on humus-iron podzols is very markedly

larger than would be expected (table 5.15). It should however be noted that this is evident only for the island and peninsula zone of the area of study (tables 5.17 - 5.21 cf. table 5.16). Here the humus-iron podzols are mainly of the Corby Association (Bown et al. 1982, 40-2) often developed on gravels on raised beaches or on fluvio-glacial fans in low lying valleys. They are often used for agriculture today. Pockets of humus-iron podzol of map unit 99 occur throughout the island and peninsula zone of the area of study, but the soils of map unit 100 occur only in west Arran and are restricted to two small areas. One of these is inland from Machrie Bay in the vicinity of the stone circles and other monuments, and the other is in the Shiskine valley nearby. Thus for the islands and the peninsulas of the area of study the analysis of the relationship of monuments to present soils reaffirms the likely importance of coastal and valley pockets of particular easily worked soils not only in the Neolithic period, as Childe suggested (1934), but also in the early Bronze Age. On the Ayrshire coast on the other hand coastal sands of the Links Association, map unit 380, predominate (Bown et al. 1982, 103-4). Where humus-iron podzols are developed as these sands stabilise they are fragile to disturbance. It will be seen from table 5.16 that few monuments have been recorded here, although settlement evidence has been found, for example in the Shewalton area of the Ayrshire coast. The major contribution to humus-iron podzols in Ayrshire and Renfrewshire is from soils developed on foothill slopes in north Ayrshire from drifts derived from basaltic rocks. These are of the Darleith/Kirktonmoor Association, map unit 151, (Bown et al. 1982, 48-52). Again this is an area lacking monument records. The analysis here therefore suggests an important difference between the mainland areas of Ayrshire and Renfrewshire and

the islands and peninsulas in the Firth of Clyde.

By correlating the information on soils with that on geology for the two zones of the area of study some further insights may be obtained. This was done using a version of the programme MATR FORTRAN. The results here concern actual numbers of monument locations and no statistical evaluation is attempted (tables 5.22,5.23). In Ayrshire and Renfrewshire it will be seen that the largest number of monuments recorded on raised beach deposits is from areas presently built up. Some few also occur on brown forest soils, and here it may be noted that monuments occur on brown forest soils which are developed on a range of geological deposits. In the islands and peninsulas two thirds of the monuments occurring in built up areas are also on raised beach deposits. However the largest number of monuments recorded on raised beach locations is associated with humus-iron podzols. Other soils on the raised beaches on which monuments are recorded are alluvial, brown forest and gleys. The occurrence of monuments located on rock within areas of humus-iron podzol, which may also be noted from this correlation matrix (table 5.23), reflects the siting of monuments on areas of solid rock as noted above (5.3.4), as in the example of Machrie Moor, Arran where, as we have seen, some monuments occupy a boss of New Red Sandstone located in an area of raised beach and alluvial deposits.

## 5.5 Sites and Land Use

### 5.5.1 Analysis

As far as possible the present land use for sites in the data file



was determined in the field. The categories used are listed in the Notes to Appendix 1 and in table 5.24. The programme MATR FORTRAN was then used to determine the observed numbers of sites recorded in each category for all sites and for the monument groups, both for the region of the area of study and for the sub-regions.

As no land use map is available for the whole study area, a map was prepared at 1:250,000 to show, as accurately as possible, the area of each category of present land use. This was based on the Land Capability for Agriculture Map of South West Scotland (1:250,000) (Sheet 6) (The Macaulay Institute for Soil Research, Aberdeen, 1982). It is understood here that the land capability classifications are based on the perceived potential for agriculture, rather than the actual present land use. Nevertheless it was felt that a sufficiently close approximation was achieved, especially with the inclusion of forested areas as discussed below. Categories were generalised in keeping with those used in field observations - land suitable for arable and pastoral agriculture (map classes 2, 3, 4 - class 1 does not appear within the study area), land suitable for rough grazing and moorland (map classes 5 and 6), rock, scree and other land with very limited agricultural potential (map class 7) and built up areas. In order to measure as accurately as possible the areas of land under forest, also important for this study, updated maps of areas of recent re-afforestation were obtained from the Forestry Commission. Observation during field work had suggested that there had been quite a marked increase in forest plantations in parts of the area of study since the publication of the 1:50,000 O.S. maps used for this study, most of which were based on revisions in the 1950s. The areas of forest from the up to date Forestry Commission maps were incorporated in the map of land

use and the resulting map was the basis for fig. 2.5. Samples of land use categories were then taken using a uniform grid, and expected frequencies calculated. The observed and expected frequencies were then compared using the  $\chi^2$  test.

### 5.5.2 Results - All Sites

The results of the analysis for all sites in the data file whose location is known are shown in table 5.25. The high value of the  $\chi^2/\text{d.o.f.}$  shows that agreement with the uniform distribution is very poor. Examination of the  $\chi^2$  values suggests that at the regional level there are more sites that would be expected in areas presently built up, and fewer in areas of moorland and rough grazing and in areas presently under forest.

### 5.5.3 Results - Monument Groups

The results at regional level are shown in table 5.26. Overall it will be seen that agreement with a uniform distribution is very poor, and the number of monuments in areas presently built up is markedly larger than would be expected, while in areas presently under forest numbers of monuments are much smaller than would be expected. In detail however the contributions to the trends noted above vary for the different monuments. Monuments recorded with greater frequency than would be expected in areas presently built up include standing stones, Bronze Age cairns and mounds and unmarked Bronze Age burial sites. Of these the unmarked Bronze Age burial sites are by far the most prominent. Standing stones and unmarked

burial sites are also among the monuments which occur in numbers larger than would be expected on present agricultural land. The shortfall in numbers compared with those expected in forested areas arises from standing stones, Bronze Age cairns and unmarked burial sites, while for areas of rough grazing and moorland it comes mainly from standing stones and unmarked Bronze Age burial sites. In contrast for Neolithic cairns, stone circles and cup-marked rocks agreement with a uniform distribution is very good. These findings do not of course reflect the fact that the monuments are very unevenly distributed over the whole area of study (tables 4.1, 5.1).

The breakdown of the analysis for the monument groups into the sub-regions of the area of study is shown in tables 5.27 - 5.32. It will be seen that it is in Ayrshire and Renfrewshire (table 5.27) that the larger number than expected of monuments in areas presently built up is very prominent, although this can also be seen in Kintyre and on Arran (tables 5.28, 5.30). It is in Ayrshire and Renfrewshire that standing stones and Bronze Age cairns occur in larger numbers than would be expected in built up areas in addition to the unmarked burial sites which are the dominant factor. We recall that both standing stones and unmarked burial sites were found to occur in numbers larger than expected on raised beach deposits in this part of the area of study (5.3.3). On the other hand fewer monuments than would be expected occur on the present agricultural land, although it should be noted that, based on the data in tables 5.24 and 4.1, it can be calculated that 84% of the present agricultural land in the area of study is located in the Ayrshire-Renfrewshire sub-region. Monuments on rough grazing and moorland are at the expected values.



In Kintyre (table 5.28) the numbers of monuments on present agricultural land is markedly larger than would be expected. Monuments involved are standing stones, unmarked Bronze Age burial sites and cup-marked rocks. There are fewer standing stones and unmarked burial sites than would be expected in areas of rough grazing and moorland, but here cup-marked rocks are near expected frequencies. All the monuments occur at frequencies less than expected in areas presently under forest, but this trend is especially marked for standing stones, unmarked burial sites and cup-marked rocks. The occurrence of Neolithic and Bronze Age cairns is nearer to a uniform distribution.

In Cowal (table 5.29), although the number of monuments is small, the results suggest an association of monuments with present agricultural land rather than forested areas, but for cup-marked rocks the agreement with a uniform distribution is good.

On Arran (table 5.30) Neolithic cairns, standing stones and Bronze Age cairns all occur on present agricultural land at frequencies greater than expected. Neolithic cairns also occur in numbers greater than expected in areas presently under forest. Both Neolithic cairns and standing stones are among the monuments which occur in numbers smaller than expected in areas of moorland and rough grazing. For stone circles agreement with a uniform distribution in relation to present land use is good.

On Bute (table 5.31) numbers of unmarked Bronze Age burial sites in areas of present agricultural land are somewhat larger than would be expected, and somewhat smaller than would be expected in areas of moorland and rough grazing. For both Neolithic and Bronze Age cairns however the agreement with a uniform distribution is good, as is the case

for Bronze Age cairns occurring on the small islands (table 5.32), but here, as we have already noted, numbers of sites are small.

#### 5.5.4 Summary and Conclusion

The findings of the analysis suggest that there are indeed important links between the archaeological record and present land use, as was suggested from consideration of the formation of the archaeological record in chapter 3, and mentioned above (5.2.9). In exploring these links in detail in chapter 8 the survival and discovery potential (Stevenson 1975) of the monument groups will be considered. The main points suggesting such links may be summarised as follows. One very strong indication is the association of sites with areas presently built up, found to be most evident in Ayrshire and Renfrewshire, where, as was noted (3.5.1; 3.6.1) disturbance of the coastal fringe through development has been most intense. Another is the occurrence of larger numbers of monuments than would be expected on present agricultural land. This feature is apparent in Kintyre, Arran and Bute and perhaps also in Cowal, but not in Ayrshire and Renfrewshire, where, as was noted, observed numbers of monuments fall slightly below the numbers expected (table 5.27). There seems to be some difference between town and country in Ayrshire and Renfrewshire, a suggestion which receives some support from correlation of the information on land use with that on geology. Tables 5.33 and 5.34, prepared in the same way as tables 5.22 and 5.23 discussed above (5.4.4) again show actual numbers with no statistical evaluation. It will be seen that in Ayrshire and Renfrewshire (table 5.33) the majority of the monuments recorded on raised beach deposits are also in areas presently built up,



confirming discovery and recording in these areas. In contrast monuments recorded on present agricultural land are dispersed, over a wider range of geological deposits very similar to those noted (5.4.4) for the brown forest soils with which agriculture has been associated in recent times. This would be in keeping with the possibility that the early, rapid and intensive agricultural improvement described above (3.2.2) may have led to destruction and poor recording of archaeological remains. As will be seen below (8.4.3), this point is particularly relevant to Bronze Age burial sites. In the islands and peninsulas however (table 5.34) the association of monument records with both the agricultural land and the built up areas on the raised beaches is very marked.

The analysis has also shown that fewer monuments than would be expected occur in areas of rough grazing and moorland in Kintyre, Arran, Bute and perhaps also in Cowal; whereas in Ayrshire and Renfrewshire numbers are close to the expected values. This is in keeping with the suggestion (2.4.5) that undisturbed areas of the islands and peninsulas, often carrying peat or peaty soils (2.3.2) may be areas where archaeological remains are less likely to be discovered. The shortfall in comparison with expected numbers of monuments in areas presently under forest is particularly marked in Kintyre and probably also in Cowal, both areas where, as we have seen, (3.6.1) the percentage of land under forest has been much increased in recent re-afforestation and is now particularly high (table 5.24, fig. 2.4). This would be in agreement with the suggestion (3.6.1) that modern re-afforestation of undisturbed moorland and rough grazing is unlikely to lead to discovery, but rather to destruction of undetected archaeological remains.



## 5.6 Sites and Aspect, Sites and Prominence

### 5.6.1 Analysis - Aspect

In recording the aspect of sites in the data file ten possibilities were considered - hill top or crest of ridge positions, sloping ground facing north, north east, east, south east, south, south west, west or north west, and positions on flat or undulating areas of land. The criteria used in deciding these categories are explained in the Notes to Appendix 1. The general relief of the area of study is shown in fig. 2.2. The programme MATR FORTRAN was used to determine the observed numbers of sites occurring in each category for all sites and for the monument groups, for the area of study both at regional level and for the sub-regions.

The proportions of land of each aspect within the area of study were determined for region as a whole and for the sub-regions by sampling of points on a uniform grid using the same criteria for determining aspect category (table 5.35). Expected frequencies were calculated and the observed and expected frequencies compared using the  $\chi^2$  test.

### 5.6.2 Results - All Sites

The results for the analysis for all sites in the data file whose location is known are shown in table 5.36. It will be seen that agreement with a uniform distribution is poor. Examination of the  $\chi^2$  values suggests that the following factors are involved. These are given in order of importance. There are fewer sites than would be expected in

areas of flat or undulating land. More sites than would be expected occur particularly on south west facing slopes, but also on hill top or crest of ridge positions and on west facing slopes. There are fewer sites than would be expected on slopes facing to the north.

### 5.6.3 Results - Monument Groups

These overall trends are confirmed in the analysis for the monument groups at regional level (table 5.37), although here in addition south east facing slopes emerge as somewhat favoured. It is also important to notice the variations made to the overall picture by monuments of the different kinds. The shortfall in comparison with expected numbers of monuments on areas of flat or undulating land is balanced for Neolithic cairns by slightly larger numbers than would be expected on west, south west, south, south east and north east facing slopes. For standing stones and Bronze Age cairns numbers occurring on both south west facing slopes and hill top or crest of ridge positions are larger than would be expected. The larger number of monuments on south east facing slopes, in addition to west and south west facing positions, arises from cup-marked rocks. For stone circles and unmarked Bronze Age burial sites however findings are in keeping with the expected frequencies.

The breakdown of the analysis of the monument groups into the sub-regions of the area of study is shown in tables 5.38 - 5.43. It will be seen that none of the findings suggest any local variations from the trends indicated above for the area of study at regional level. The occurrence of Bronze Age cairns in larger numbers than would be expected on hill top or crest of ridge positions and on south west facing slopes is

evident in Ayrshire and Renfrewshire (table 5.38). The larger number of stone circles on flat or undulating land is especially marked on Arran (table 5.41).

#### 5.6.4 Prominence Ratings

The aspect of a site is likely to be closely linked to whether it appears as a prominent or conspicuous feature in the landscape. It is therefore appropriate to discuss here the analysis of the ratings made on prominence. The criteria on which the ratings, based on present conditions, were made are discussed in the Notes to Appendix 1, and the ratings are listed in table 5.44, where the number of sites in the data file allocated to each of the five categories is shown. The fact that there are 56 sites for which no rating was made because the present location of the site made prominence difficult to judge means that the figures are not comparable overall. However it does appear that for a substantial number of the sites throughout the area of study for which ratings were made the visual impact of the site in the landscape was important.

The results of the correlation matrix prepared using the programme MATR FORTRAN to analyse the ratings on prominence made for the monument groups are shown in table 5.45. This matrix includes the calculation of the significance as detailed in section 4.3.3. If we assume that it was always possible to choose from a range of prominent, conspicuous or other locations, some indications may be suggested concerning the relative importance of prominence for different kinds of monument. Neolithic cairns, stone circles, standing stones and Bronze Age cairns and mounds



all appear less frequently in locations considered not prominent or conspicuous than would be expected were sites arbitrarily positioned in the landscape. Of these stone circles appear with slightly greater frequency than would be expected in positions rated as prominent or commanding. Cup-marked rocks on the other hand were rated not prominent or conspicuous more often than would be expected, and unmarked Bronze Age burial sites are noticeably less frequent than would be expected in positions considered prominent or conspicuous.

#### 5.6.5 Summary and Conclusion

In summary, analysis of the aspect of sites and the prominence ratings recorded in the data file indicates that both were significant in choice of site location. The findings will be taken up in detail in consideration of the siting of the monuments in chapter 8. The following points concerning aspect may be summarised. Numbers of sites are smaller than would be expected on areas of flat or undulating land and on north facing slopes, and larger numbers of sites over what would be expected occur on south west or west facing slopes and on hill top or crest of ridge positions. For the monument groups these general trends apply particularly to Neolithic cairns, standing stones, Bronze Age cairns and cup-marked rocks, whereas less difference was found from the expected frequencies for stone circles and unmarked Bronze Age burial sites. The analysis of prominence ratings suggests that for Neolithic cairns, standing stones, stone circles and Bronze Age cairns a position which was assessed as commanding, prominent or conspicuous in the landscape was important in choice of location. This is well illustrated by the

commanding impression of the stone circles on Machrie Moor, Arran, which, as has been noted, lie on a boss of rock which rises only slightly above the surrounding moorland. A prominent or conspicuous position was however less important for cup-marked rocks and the unmarked Bronze Age burial sites.

The findings concerning aspect are, as we have noted, consistent throughout the area of study. It is therefore instructive to draw attention to the percentage distributions of land of the different aspects in the various sub-regions (table 5.35). As we have seen (tables 4.1, 5.1) Ayrshire and Renfrewshire form the largest sub-region within the study area, yet have a small percentage of sites per square kilometre. It is clear from table 5.35 that Ayrshire and Renfrewshire also have a very high percentage - only equalled on Bute - of the flat or undulating land on which numbers of most kinds of monuments are lower than would be expected. Moreover the percentages of land sloping south west and west, on which numbers of monuments are larger than would be expected are lower in Ayrshire and Renfrewshire than in Kintyre and Arran or in Cowal - although for Cowal it must be pointed out that the geographical boundary of the area of study is more arbitrary than elsewhere. We have noted that the effects of exposure under present climatic conditions are most severe in the areas of the islands and peninsulas open to the prevailing westerly winds (2.3.5). This is one factor which may have influenced the concentration of present settlement on the east facing coasts (3.4.1), and the development of widespread recent re-afforestation on the more sheltered eastern sides of the watersheds (3.6.1.). As we have noted (2.4.4) there is much uncertainty about climatic conditions in the Neolithic and early Bronze Age, but there has been the suggestion that

quieter conditions may have prevailed. If that is so west and south west facing areas on the islands and peninsulas may have been less inhospitable than they often appear at the present time.

### 5.7 Conclusion

All the location factors chosen for analysis have shown differences from a uniform distribution, and for some factors the differences are very marked. As was noted above (5.1), it could be expected that the analysis would show ways in which the location factors are inter-related. However, through comparison of the sub-regions within the area of study with the region as a whole, and of the different monument groups against the data for all sites, the analysis has brought out important differences which exist between the sub-regions and in the occurrence of different kinds of monument. Such differences are relevant not only to assessment of the archaeological record as indicated by the spatial distribution of the monument groups, which will be undertaken in detail in chapter 8, but also to consideration of relationships within the area of study and their change through time in the Neolithic and early Bronze Age periods, which will be a major theme of discussion in that chapter.



## CHAPTER 6

### THE NEOLITHIC AND EARLY BRONZE AGE IN THE FIRTH OF CLYDE - HISTORICAL AND REGIONAL PERSPECTIVES

#### 6.1 Introduction

This chapter will first of all provide the historical perspective which has already been seen to be important to this study (chapter 1). Thereafter environmental and cultural evidence will be examined which offers perspectives at regional level for the monument record for the Neolithic and the early Bronze Age to be considered in chapter 8. In section 6.2 the evidence for later Mesolithic or hunter-gatherer activity will be described, as will the continuities from Mesolithic to Neolithic indicated from recent research mentioned above (1.2.4). The implications of this evidence for Mesolithic and early Neolithic society will be discussed. In section 6.3 the results of the palaeobotanical research presently available for the area of study will be collated and the potential of this evidence as an indicator of prehistoric activity evaluated. The likely extent of Neolithic activity will be further examined (6.4) from consideration of the distribution of polished stone axeheads found within the study area. Settlement evidence will be discussed in section 6.5. Although, as we have seen (1.2.3), this evidence is too limited to give an indication of the likely extent of settlement, it offers some insight into its nature. Table 6.1 shows the chronology available for the archaeological record and relates it to environmental evidence from Machrie Moor, Arran.

## 6.2. The Mesolithic

### 6.2.1 Introduction

The evidence for the Mesolithic period in south-west Scotland has recently been the subject of a full and comprehensive review by Morrison (1982). As Morrison has stressed, the evidence is limited not only by the nature of the cultural material - mainly surface collections of flints - but also by variations in visibility and discovery. Sites have become apparent in areas of surface disturbance or natural denudation, and are detected where fieldwork has been carried out, so that the picture may be uneven and incomplete. The sites mentioned in the text are shown in figure 6.1.

### 6.2.2 The Evidence

#### Coastal Activity

It can be seen that the emphasis on coastal locations and the use of littoral habitats which Morrison noted is very marked in Ayrshire, where the largest number of find spots and sites within the area of study is concentrated. Scatters of artefacts and waste material have been found at numerous locations around the mouths of the Stinchar, Girvan and Irvine rivers, and along the coast between Girvan and West Kilbride. For example, in south Ayrshire, near Ballantrae material turned up in ploughing sandy soil overlying raised beach deposits included Mesolithic forms (Edgar 1939). Beach pebble flint, chert, quartz and chalcedony were

present in Edgar's collection as well as pitchstone from Arran. Morrison considered that the location suggests occupation during land recovery. As we have seen (2.4.2) the maximum of the Holocene transgression was probably around 4000 bc (6000 bp), but isostatic land recovery may not have commenced in some areas until 3500 bc (5500 bp) or later (Jardine 1975, 1977) (tables 2.1, 6.1). As Morrison has observed (1982) the number of sites known from surface collections has increased as a result of fieldwork between 1965 and 1976 along the coast between Ballantrae and West Kilbride. Notable among collections made by Mr Malcolm MacNeill was that from Ballantrae (1965a) which contained about 100 flints considered to be Mesolithic. In both the Girvan and Shewalton areas a variety of littoral habitats - beach, marshland and lagoon, estuarine and river-mouth - is likely to have been available in the marine transgression and regression period, offering a rich environment for late Mesolithic activity (Jardine 1962, Jardine and Morrison 1976, Boyd 1982). Boyd commented on his revision of the reconstruction of the environment of the Shewalton area that the increased range of coastal and hinterland habitats 'may have encouraged quite intensive Mesolithic activity' (1982, 17). The low fenland and sand dune area of the Laggan, Kintyre, described above (2.3.3) would have offered a similar range of habitats, but the evidence for Mesolithic activity here is less strong. Nichols (1967) noted changes in the forest cover which may indicate human activity around the zone VI-VIIa transition, ca. 5500 bc (7500 bp), in an undated pollen diagram for Aros Moss. Charcoal is not recorded, and Edwards and Ralston (1984) found the evidence inconclusive. Morrison has pointed out that the cultural evidence for the area cannot be used to support an anthropogenic explanation. Finds from blown sand deposits at Lange Links,



Machrihanish (Lacaille 1954, 288-9) remain problematic. Flints found in raised beach locations at Dalaruan-Millknowe (Gray 1894) and Albyn Distillery (McCallien and Lacaille 1941), Campbeltown, which suggest Mesolithic activity in the area, were tentatively placed by Morrison before and after the maximum sea level respectively (table 6.1). More enigmatic is the report of the finding of a barbed bone point at Loch Ascog, Cowal. The find spot is recorded by Scott (1966, fig. 1), and the bone point is described by him (recent letter to J N G Ritchie, RACHMS) as 'certainly Mesolithic'. Unfortunately its present location is not known.

### Inland Activity

There is now some evidence of inland activity which would be in keeping with the use of a range of territory in a seasonal pattern of exploitation. Sites discovered at Loch Doon (Ansell 1968, 1969) have recently been examined. At Starr 1 Affleck (1986) revealed occupation levels and knapping spots. Edwards and Ralston (1984, 24) have suggested, in view of the increasing evidence of Mesolithic activity in this area discovered as a result of recent fieldwork (Edwards et al. 1983), that 'fire disturbance' noted by Birks (1975) in analysis of a blanket bog deposit at Cooran Lane in the Galloway hills in 'sample levels dated to  $5591 \pm 120$  bc (Q-874)' ( $7541 \pm 120$  bp) may have an anthropogenic explanation. It may be remarked here that changes in the forest vegetation at two levels in zone SB-3 which preceded the elm decline at the nearby site of Snibe Bog, attributed by Birks to possible interference by 'early Neolithic man' (1972, 206), could equally reflect Mesolithic activity. Further north there may have been a Mesolithic presence in the area round Gryfe Reservoir in the Renfrewshire hills, where microliths were noted among finds from an area for which later activity is discussed

below (Newall 1966, 46; 1974, 9). Flint scatters have been recorded in Ayrshire from river terrace as well as coastal locations. Recently some have been listed (e.g. RCAHMS 1985), but in general this material has not been well studied and there has been an absence of systematic fieldwork, so that the extent of this evidence may not be known at the present time.

### Island Activity

Evidence for Mesolithic activity on the islands of the Firth of Clyde has been elusive (Morrison 1982), but here too the picture has changed as a result of recent discoveries on Bute which may be set alongside evidence from Arran. The finding of a flint core, with small bladelet scars, among shells eroding from the shell midden which underlies Glecknabae chambered cairn (BUT 4) (BU 8), suggests Mesolithic activity here which previously could not be documented (Cormack 1985). Among material from a chipping floor discovered near St Blanes in the south of the island (McFadzean 1985) were microliths in agate, and there have been recent collections of flints at two other locations on Bute (Cormack 1985). At the Kilchattan site, located on the bluff at the inland edge of the raised beach, 180 flints, which included geometric microliths, were found in a patch of discoloured soil. The results of the petrographic and trace element analyses of pitchstone finds, mentioned above (1.2.4) (Thorpe and Thorpe 1984), have confirmed that Arran was the source of worked pitchstone found in locations around south-west Scotland and beyond. Their first occurrence in Mesolithic contexts indicates movement around the islands and peninsulas of the Firth of Clyde. The possible antiquity of the use of such lithic sources in western Scotland has recently been demonstrated for the bloodstone of the island of Rhum



(Wickham-Jones and Pollock 1985). The evidence for Arran that exploitation of pitchstone began in the Mesolithic and continued through the Neolithic and into the early Bronze Age is a strong indication of continuity of traditions of resource exploitation. Mesolithic activity on Arran is also suggested from both palaeobotanical and cultural evidence. From analysis of pollen and charcoal from peat cores from Machrie Moor Robinson (1981) noted that episodes of possible interference with the forest and other vegetation were indicated from around the beginning of the Holocene marine transgression. The presence of charcoal of a herbaceous nature, possibly Phragmites, first noted at 8665 $\pm$ 155 bp (GU-1427) (6715 $\pm$ 155 bc) and more continuously from ca. 7900 bp (5950 bc), suggested to Robinson the burning of dry reed beds to drive out game (1981, 183). This would be in keeping with the environmental conditions resulting from sea penetration in this area discussed above (2.4.2). After comparing his findings with data from other sites in Scotland, Robinson suggested (1983) that the occurrences of charcoal in the pollen core at Machrie Moor are more in keeping with anthropogenic than natural fires. Again continuity into the Neolithic is suggested, for Robinson concluded that 'from approximately 7900 bp onwards occupation appears to have been more or less continuous, extending through into the Neolithic period' (1983, 5). Cultural evidence for a Mesolithic presence on Arran comes from two sites in the south of the island, Knockenkelly near the coast and Auchareoch on higher ground inland, where flints including microliths, worked pitchstone and quartz have been collected (Fairhurst 1981, 10). Preliminary investigations at Auchareoch (Affleck et al. 1985) suggest that this site may produce occupation evidence (plates 13, 14).

#### Possible Burial



Mention should be made of one further tantalising piece of evidence noted by Morrison (1982) - the finding of a group of skeletons set on beach materials with a covering of dog whelk shells at Dounan, south Ayrshire (Moore and Smith 1855). Nothing was found which could link this burial to a prehistoric period, but Morrison did note possible resemblances to the later Mesolithic cemetery at Vedbaek-Bogebakken in Denmark (Albrethsen and Brinch Petersen 1976).

### 6.2.3 Discussion

#### Exploitation Patterns

Mesolithic exploitation patterns are likely to have included both inland areas and the islands and peninsulas of the archipelago. As movement would be subject to seasonal limitations, it could be suggested that major resource spaces such as those on the Ayrshire coast may have been the foci of longer term activity. An appropriate model might be 'complex hunting' as defined by Rowley-Conwy (1983, 114) with a 'single residential base and attendant special purpose camps', or the 'complex foraging' which Zvelebil (1986, 91) suggests 'ought to serve as the defining characteristic of the Mesolithic period' throughout the Eurasian forest zone. Evidence for detailed reconstruction of seasonal exploitation is lacking, but study of more recent traditions of food procurement in the area (Martin 1716, Darling and Boyd 1964) suggest that the inland areas, islands and peninsulas would have offered salmon and eel fishing, thought to have been important in the Irish Mesolithic (Woodman 1978, 1981), and allowed access to localised coastal resources - shellfish, migrating and local wildfowl and seal. The indented coasts of

the islands and peninsulas offer abundant coves to shelter small boats (Brackenbury 1981, 11) and there is a long tradition of fishing for the sea fish which move into shallower water in early summer which Clark (1980) suggested may have become important in the Mesolithic. In quite recent times Kintyre fishermen ran their skiffs up the beaches to camp on the shore (Martin 1980). The islands and peninsulas are also likely to have offered particular opportunities for hunting and gathering. In coastal areas exposed to the prevailing westerly winds (2.3.5) the forest is likely to have been more open (cf. Grigson 1981) than in mainland areas such as Ayrshire (Turner 1970). As we have seen (2.4.3) this is likely for south and south-west Arran (Robinson 1981, 133). As well as providing areas for light-loving plants such as bramble and hazel, open woodland would be a congenial habitat for animal species (Grigson 1981).

Arran may have been particularly rich in localised resources. Its range of habitats, as we have seen (2.3.5), is distinctive within the Firth of Clyde. The variety of flora and fauna was vividly described in a thirteenth century prose poem (O'Grady 1892, 2, 108-9) which extolled the many stags and wild swine, the richness in fish, the cliffs of sea birds and the abundance of nuts and berries. Moreover it is unique in being the only source of pitchstone. The striking appearance of the outcrops on Dun Fion was noted by early travellers (Pennant 1774-6, 185). In 1918 Mann suggested that its exploitation may have contributed to the importance of Arran in prehistory, and noted that a hoard of cylindrical pieces of pitchstone had been found deep in the peat of Tormore.

An exploitation pattern of this kind would be in keeping with the suggestion noted above (1.2.4) that hunter-gatherer societies may have developed something of the ongoing emotional commitment to a community and

its ancestors and investment in the land and its resources which have been seen by Meillassoux (1972) as features of farming communities (Harris 1977, Bender 1981, Chapman 1981, Rowley-Conwy 1981, Zvelebil 1986). The use of seasonal resources will foster an awareness of seasonal patterns and the habit of scheduling activities (Rowley-Conwy 1983 cf. Thomson 1939), a requirement in a farming routine. Manipulation of the forest, as suggested for Machrie Moor, may facilitate 'the replacement within a grazing environment of one set of animals by another, coupled with the gradual extension of areas cleared for fields' (Rowley-Conwy 1982, 209). The development of coastal economies, as suggested for Ayrshire, has also been seen as an initiation of food production strategies (Dennel 1983) and an encouragement to sedentism.

#### Social Interaction

Among the finds of pitchstone sourced to Arran by Thorpe and Thorpe (1984, Appendix 1) a number have been found in probable Mesolithic contexts. Locations include the Tweed Basin, Eskdalemuir in Dumfries and Galloway and Islay in Argyll, suggesting that at times pitchstone may have been moved over significant distances as well as being distributed within the more immediate surroundings of Arran. This evidence allows a glimpse of the social interaction that Mesolithic 'subsistence' groups may have had through 'reproductive groups or networks' (Dennel 1983, 14 cf. Bender 1978), of the kind (Renfrew 1975) which could bring knowledge of agriculture and acquisition of the necessary resources. Contact at this time with north-east Ireland remains uncertain (Woodman 1978, 1981; Morrison 1982), but Antrim would have been a possible source of quality flint to supplement the beach pebble flint and the limited chert available within the Firth of Clyde area (Wickham-Jones and Collins 1978). Such



contact was suggested by Gray (1894) from the finding of three large worked flint nodules at Millknowe, Campbeltown, Kintyre. Gray's conclusion was supported by Callander (1917). At a more general level evidence of coastal movement within the Mesolithic suggests that the Firth of Clyde would be linked into networks of exchange and communication along the Atlantic seaboard of Europe. Here Arran occupies a strategic position. Brackenbury (1981, 11) describes the sea approach to the Firth of Clyde as 'dominated by the dramatic mountains of Arran' to which the rocky eminence of Ailsa Craig acts as a signpost (plates 7, 8). Such landmarks are likely to have been vital in early navigation, so that Arran, prominent and central in the entrance to the Firth, would have been a likely port of call as well as a staging post for sheltered routes inland and to the north.

Although Mesolithic society may have been in some ways predisposed to the introduction of farming, the Firth of Clyde would be perceived from within the culture and experience of a hunter-gatherer way of life. For the familar area of 'home ground' a detailed knowledge of resources is likely to have been passed on through generations. In the forest the habits of the fauna would be known, and the opportunities for 'prospect' and 'refuge' (Appleton 1975) offered by natural or man-made clearings understood. Through living and working close to the sea edge the prospect of the Firth and its islands would be always in view. From every point around the Firth this would be dominated as it is today by the island of Arran whose mountains, reaching to the sky, may have been evocative of special times and places. To reach these places, whether on the islands or in the less frequented inland areas, meant a journey over the sea or through the forest. It was thus that contact could be made with

neighbouring groups or with people from far away who brought knowledge of a wider and perhaps different world.

### 6.3 Farming in the Neolithic and Early Bronze Age - Evidence from Pollen Analysis

#### 6.3.1 Introduction

As was already suggested (2.4.3), the findings of palynological research, through giving indications of the presence or absence of Neolithic and Bronze Age farming activity, may offer independent evidence to compare with the spatial distributions of artefacts and monuments. It should be stressed however that there are difficulties in using the evidence from the pollen analyses relevant to the area of study which are available at the present time as a guide to the introduction and development of farming across the region. In the first place, as Edwards and Ralston (1984) have emphasised, separating Mesolithic from Neolithic activity where there is no clear evidence for cereal cultivation may not be possible. They also suggest however that pre-elm decline occurrences of cereal pollen may have been missed in earlier work because there was an assumption that farming did not arrive before that time. These factors are likely to be important in considering a body of evidence which is drawn from studies conducted at different times in the various parts of the area of study, Moreover as we shall see it seems likely that particular caution is required in interpreting the contrasts suggested on present evidence between Arran and Ayrshire. The location of the sites of pollen analyses discussed are shown in figure 6.1.



### 6.3.2 The Evidence

#### Arran

The most recent analysis carried out within the area of study is that of the long peat section from Machrie Moor, Arran already mentioned (2.4.3) which, as we have seen (6.2.2), suggested very early anthropogenic interference with the forest (Robinson 1981). This work, undertaken in connection with excavation of a group of sites at Tormore, discussed below (6.5.2) (Barber 1982 and Barber forthcoming), has provided a vegetational history relevant to the island of Arran broadly in keeping with the regional synthesis suggested by Birks (1977, 1980) for the west of Scotland and resembling quite closely the sequence found by Birks (1972) for sites in the Galloway hills (Robinson 1981, 77). One difference is the open woodland already noted. Robinson commented on this (1981, 133): 'Even at the maximum of the Flandrian forest the tree pollen values do not exceed 45% TP. This suggests that a very open woodland must have been maintained throughout'. Local conditions of climate and exposure will have contributed to this, but episodes of interference with the forest by Mesolithic man are also likely to have been important. Robinson's study also provides a detailed framework for the archaeology of the Machrie Moor area not equalled elsewhere in the area of study. For example he has been able to demonstrate that rises and falls in pollen are closely reflected in changes in charcoal levels - a strong indication of human activity. Moreover, this is one of a small number of recent studies which have revealed evidence for pre-elm decline agriculture including cereal cultivation, with cereal pollen identified at generic



level (Edwards and Hiron 1984). The sequence is described by Robinson (1981, 86-102), from whose account the following discussion is drawn. A summary is provided in table 6.1.

The first indication of agricultural activity was a short period of fluctuating tree pollen values around 5750 bp (3800 bc) (zone MM4a) which suggested to Robinson coppicing or pollarding in connection with pastoral activity. He noted similar activity in the SB-3 zone at Snibe Bog discussed above (6.2.2) and likened the evidence to that from sites in Ireland, such as Ballynagilly, and in the Lake District. This was followed about 5375 bp (3425 bc) by a period of further clearance (zone MM4b). It is at the beginning of this period, well ahead of the elm decline, that there is the first episode of cereal cultivation, possibly with small arable plots (Robinson 1981, 133), and pastoral agriculture seems to have continued for 500-600 years.

The elm decline, radiocarbon dated to 4740 $\pm$ 85 bp (GU-1346) (2790 $\pm$ 85 bc), was followed by a period of 400-500 years of farming, mainly pastoral activity. Further forest clearance was suggested by a decrease in pollen of tree species other than elm. Evidence for cereal cultivation during this period (zone MM5a) was slight, and Robinson interpreted this as a time of stable agriculture, possibly with a rising population. A reduction in agricultural activity followed until ca. 3950 bp (2000 bc) (zone MM5b). This could be seen as similar to reductions noted in other areas of Britain and Ireland, as will be discussed further below (8.3.4). Here we may note that at Machrie Moor this phase was short and could be related to 'local wet conditions' (Robinson 1981, 95). A farming population continued to be present throughout. The lull in activity was followed by a renewal of clearance of the forest for pastoral

activity.

This marks the beginning of a period of increased agricultural activity, and intensification took place from the period ca. 3550 - 3050 bp (1600 - 1100 bc) (zone MM6a) with increased clearance of the forest, first for arable and then for pastoral agriculture. After considering this evidence along with soil samples and the results of the excavations at Tormore (Barber 1982 and forthcoming), Robinson (1981, 129) suggested 'a small stable population engaged in pastoral and arable farming and using larger field units'. The general downward trend in tree pollen values reflects increased agricultural activity, but regeneration periods also occurred. A particular peak of activity was reached ca. 2900 - 2800 bp (1050 - 950 bc) (zone MM6b), at the time of the later Bronze Age occupations of the Tormore structures. All the land around the valley may have been in use for both arable and pastoral agriculture, possibly in response to an enlarged population and the concentration of agriculture as the fertility of the higher ground decreased (Robinson 1981, 136). The available resources may have been fully stretched following the initiation of the spread of blanket bog from around 3350 - 3250 bp (1400 - 1300 bc). At Tormore excavation showed peat formation from about 1200 bc. Robinson considered that this period represented the 'culmination of the steady increase in clearance and land use which occurred throughout the Bronze Age' (1981, 97) as noted in Ireland (Smith 1975, Lynch 1981) and elsewhere in Britain (Mercer 1981, Introduction). This phase was also detected at Aros Moss, Kintyre (Nichols 1967). As Robinson points out, the first significant clearances at Bloak Moss, Ayrshire are also from this time (Turner 1970).

Kintyre



At Aros Moss, Kintyre the first cereal cultivation recorded was linked to the farming in the Bronze Age. Robinson however (1981, 135) supported Nichols' interpretation (1967, 179) that before this time periods of pastoral activity were indicated by changing levels of tree and herbaceous pollen in Nichols' sub-zones A1, A2 and A3 (1967, 168). These began after the elm decline which, from the radiocarbon dated sequence at Loch Cill an Aonghais (Switsur 1981, 93) is likely to have occurred at about the same time as on Machrie Moor. In sub-zone B forest clearance was discontinued, suggesting a reduction in agriculture in the later Neolithic as on Machrie Moor. Renewed clearance in sub-zone C1 affected oak as well as elm and may have been prolonged (Nichols 1967, 180). The first records of cereal pollen, at the end of this sub-zone, were linked to the arrival of Bronze Age farmers. Mixed farming activity reached a peak in sub-zone C2, similar to that mentioned above at Machrie Moor.

#### Lowland Ayrshire

The evidence for the Ayrshire lowlands is particularly inconclusive because of difficulties in interpretation. From her careful investigations of pollen profiles from several points at different distances from the edge of an area of the raised bog at Bloak Moss and Kennox Moss, Turner (1965, 1970, 1975) found no indication for breaking of the forest canopy in the Atlantic period. The only herbaceous plants recorded were from within the bog. She commented (1970, 109) 'The moss seems to have been completely surrounded by forests.....There was virtually no grassland'. Tree pollen values at site A, Bloak Moss, were ca. 50-60% in the period before the elm decline (1975, fig. 2). Following the elm decline seven sub-zones were distinguished of which 1 and 2 proved



very similar in all five diagrams. Between the elm decline and ca. 3825 bp (1875 bc) (sub-zone 1) the area seemed to remain well forested, with only slight lightening of the canopy (1970, 100) which Turner attributed to the activity of Neolithic people. Disturbance seemed quite minimal, there being 'no evidence at all for open spaces in the forest'. In sub-zone 2, (ca. 3825 bp (1875 bc) - ad 415) there was evidence for a number of 'small forest clearances' followed by regenerations (1970, 109). Cereal pollen was first recorded between ca. 3750 and 2250 bp (1800 and 300 bc) suggesting some intensification of activity during the Bronze Age, as was noted above. Major clearance did not show in the pollen diagrams until Dark Age times ca. ad 400. It has been suggested (e.g. Whittington 1980, 30) that the low altitude of the site may make the findings atypical. Edwards (1982, 9-12) has suggested problems particular to the interpretation of the scale of clearance and the detection of cereal cultivation from profiles taken from bogs likely to have been surrounded by forest. Some of these difficulties may apply to the interpretation of results of investigations at Kippelmoss, also in the Ayrshire lowlands, where Durno (1956, 1976) found a similar high level of tree pollen throughout.

### Uplands

The results of investigations in the Galloway hills at sites in the vicinity of Cooran Lane mentioned above, just to the south of the area of study, suggested, as we have noted, a picture for an upland area in keeping with Robinson's findings on Machrie Moor (Birks 1972). After the traces of disturbance to the forest before the elm decline in zone SB-3 at Snibe Bog mentioned above, there was evidence of continuing anthropogenic disturbance in zone SB-4. Birks distinguished four zonules

(1972, 208-10). In zonule 1 the findings suggested possible selective use of elm leaves for fodder from the time of the primary elm decline. In zonules 2 and 3, tentatively attributed to the Neolithic, there was evidence for small temporary clearances, possibly reflecting the development of areas of upland pasture. These continued at the same level in zonule 4, considered by Birks to correspond to the period of the first temporary clearances of the Bronze Age at Bloak Moss. Only the more extensive clearances detected at Snibe Bog in zonule 5, tentatively equated with the clearances detected at Bloak Moss around ad 400-500, were apparent in the pollen spectrum for Loch Dungeon. Birks (1972, 206-7) suggested that elm may have been more common in the upland than in lowland areas. This point is supported by Durno's findings at Aird's Moss, Muirkirk (1956), where the elm decline was more obvious than at Kippelmoss. It may be, as was suggested by Pennington (1970, 63-7) that elm was less prolific on lowland moraines than on hill slopes where a higher base-status was maintained. The point made by Dickson (1981, 16) that elm grows on rich soils such as those of the basaltic valleys of the Campsie Fells north of Glasgow may also be relevant to parts of Ayrshire.

### 6.3.3 Discussion

The palaeobotanical evidence presently available for the area of study thus suggests a contrast between lowland areas of the Ayrshire mainland and the island of Arran. In the Ayrshire lowlands only low-key interference with the forest is recorded during the Neolithic period with some greater momentum in the Bronze Age. There is nothing approaching the progressive increase in scale of clearances suggested for Machrie Moor

which Robinson saw as culminating in a 'virtually treeless landscape' soon after 3000 bp (1050 bc) (1981, summary), a picture in keeping with the evidence for widespread Bronze Age settlement in the area (Barber 1982, Barber forthcoming), discussed below (6.5.2). However it is possible that further studies may alter the Ayrshire picture, and it may be premature to assume that Neolithic farmers avoided the soils and forests of Ayrshire as Childe suggested from the monument evidence (1934), especially in view of the indications of pastoral activity in upland areas.

The evidence from Machrie Moor suggests that it was the introduction of agriculture which marked the beginning of continuous and intensive use of the island, and the gradual appearance of features of a Neolithic economy from ca. 5750 bp (3800 bc) indicates that the introduction of farming into the Firth of Clyde area is likely to have preceded the earliest date known for the chambered cairns. More information on the chronology of the cairns would be invaluable, but two radiocarbon dates are available for Monamore (ARN 9) (MacKie 1964). MacKie considered that the earlier date of  $3160 \pm 110$  bc (Q 675) ( $5110 \pm$  bp) represented an early stage in the long use of the cairn (table 6.1), and this timing would be in keeping with his conclusion (1964) that the cairn was built on a turf-covered hillside. An open landscape is also suggested for the pre-cairn period at Hilton cairn, island of Bute (Marshall et al. 1976).

#### 6.4 Distribution of Polished Stone Axeheads

##### 6.4.1 Introduction



Polished stone axeheads, through their traditional association with clearance of the forest for agriculture, offer another index of the extent of Neolithic farming activity and settlement with which the evidence from pollen analysis may be compared. Dating evidence is scarce (Smith 1979), but it is likely that the main period of use was in the Neolithic, and axes of Group IX and Group VI, in circulation during the third millennium (Ritchie 1968, Smith 1979), have been found in the area. Axes of both groups are known from Ayrshire as well as from the rest of the area of study (Ritchie and Scott 1981 and forthcoming), suggesting that Ayrshire was included in networks of exchange operating at this time, and therefore a focus of some Neolithic activity. This impression is reinforced when the distribution of stone axeheads for the area of study is examined.

#### 6.4.2 Distribution

The distribution of axeheads of known provenance within the area of study is shown in fig. 6.2. These come from a total of some 128 collated for the study area listed in Appendix 2. The sources used and parameters coded are given in the notes to this Appendix, and the results are summarised in table 6.2. It will be seen that finds are well distributed throughout the area of study, but tend to be related everywhere to land suited for arable agriculture and to areas presently built up. This is in keeping with the discovery of small finds in areas of agriculture and development suggested by Stevenson (1975) which has already been noted (3.7). It may be that the parts of Ayrshire which, as we have seen (3.2.2, 3.3.2 and fig. 3.2), were subjected to very widespread disturbance

during agricultural improvement have been a particular area of discovery. This was also an area where nineteenth century collection was intensive (3.4.2). On the other hand parts of southern Ayrshire and a large proportion of the island and peninsula zone of the area of study have remained undisturbed (3.2.2, 3.3.2) and likely areas of discovery of small finds are more limited (cf. Stevenson 1975, 104). It is possible that a wider original distribution may remain undetected in these areas, for example beneath the peaty soils which are prevalent in the islands and peninsulas today (2.3.3). This speculation receives some support from finds recorded during recent reafforestation. Examples are the following: in Kintyre the two stone axeheads found at Dalsmeran (Scott 1973b) and one found recently at Kilkeddan; on Arran recent finds have been at Auchencairn and Aucheleffan.

The quite substantial number of polished stone axeheads recorded for Ayrshire (table 6.2) does however carry the implication of forest clearance and Neolithic activity in an area in which chambered cairns are largely absent. Other evidence which suggests a Neolithic presence may be mentioned. Two axeheads come from the vicinity of the probable occupation area mentioned above (6.2.1) near Gryfe Reservoir in the Renfrewshire hills, which was discovered in connection with drainage for forestry. A later Neolithic and early Bronze Age presence is suggested here from pottery sherds and flints (Newall 1966, 46; 1974, 9; Ritchie 1970, 146), and pitchstone was present. Axes of Group IX come from the Shewalton area of the Ayrshire coast. Here occupation has also been suggested from the finding of later Neolithic and early Bronze Age pottery sherds (MacNeill 1965b, 14; Ritchie 1970, 141). The flints collected from this and other areas of Ayrshire, mentioned above, may contain a

Neolithic component (Morrison pers. comm.). Lacaille considered that flints collected from the Shewalton sands comprised Mesolithic, Neolithic and Bronze Age material (1930, 1940 cf. Smith 1882). This material, not found in situ, may suggest the ongoing use of this area for hunting (Morrison 1982). In the Ayrshire lowlands, where peat cover is not generally a problem, a programme of field walking might prove fruitful in producing further evidence of settlement activity.

#### 6.4.3 Conclusion

There is thus cultural evidence which supports the suggestion that Neolithic activity in Ayrshire may not have been fully registered in the present palaeobotanical evidence. Kinnes (forthcoming) has stressed that stone axeheads, through their visibility and resilience, form an important part of the archaeological record, especially in registering settlement. It is therefore proposed that the axehead evidence should be accepted as indicating that there was Neolithic activity in Ayrshire, and in chapter 8 the appearance and distribution of Neolithic cairns in the area of study will be discussed from this perspective.

### 6.5. The Evidence of Settlement

#### 6.5.1 Introduction

Although, as has been noted, knowledge of Neolithic and early Bronze Age settlement is fragmentary and of marginal value in assessing the spatial extension of Neolithic and early Bronze Age activity in the



area of study, it does nevertheless offer information concerning the location and nature of settlement independent of the artefact and monument evidence, and insight into the relationship of settlements to monuments.

### 6.5.2 The Evidence

#### The Neolithic

At Townhead, Rothesay, (BU 39) on the island of Bute, excavation took place in 1929 in a disused gravel pit in raised beach deposits about 30 m. above sea level where finds, including pottery fragments, a polished stone axehead and a saddle quern, suggested domestic activity. The area had been examined by Ludovic Mann who concluded that it may have been the site of a Neolithic village (Marshall 1930). Excavation revealed evidence of a possible wooden building and a radiocarbon date of  $2120 \pm 100$  bc (GaK 1714) was later obtained for charcoal associated with the sherds of Rothesay style pottery (Scott 1968), which is also found in chambered cairns (7.2.1). Little detailed evidence is available because the site was much disturbed as a result of quarrying, but the location is not out of keeping with the Neolithic settlement site excavated recently at Auchategan, Glendaruel, Argyll (Marshall 1978), not far to the north of the study area. This site is at a low elevation on a shelf on the side of a river valley. Worked pitchstone was prominent among the finds, which included a range of Neolithic pottery. Traces of two huts were found as well as built hearths, and a radiocarbon date of  $2300 \pm 110$  bc (I-4705) was obtained for the upper of two occupation levels. Neolithic settlement has also been suggested for Ardnadam, Cowal, again north of the study area, where recent excavations have revealed

evidence of Iron Age and later settlement on a stony area of a low-lying alluvial fan (Rennie 1984). Vestiges of possible structures were detected in an early phase (period 1). These may indicate occupation of the site by early Neolithic people whose presence is suggested by finds of pottery, flint tools and worked pitchstone in the vicinity of a hearth which gave a radiocarbon date of  $2790 \pm 90$  bc (GU-1549). An oval or circular house was considered, from pottery evidence, to represent later Neolithic occupation (period 2). Interestingly, both of these sites are located in the vicinity of chambered cairns.

A very different kind of location for Neolithic settlement in the later third millennium bc is suggested from the evidence from Balloch Hill, Kintyre (KT 48) (Peltenburg 1982). Here the presence of pottery associated with what was probably a circular post-built structure suggested Neolithic settlement on the north west part of the summit of a hill occupied by a fort of later date. Worked pitchstone, flint and quartz found in this area as well as elsewhere were probably also of this phase (Peltenburg 1982, 195-200). The hilltop (plate 5) at 150 m. above sea level lies above the limit of present arable agriculture, and Peltenburg considered that the site may have been related to pastoral farming or hunting in the surrounding upland area where two chambered cairns, Lochorodale 1 and 2 (ARG 41 and 32) (KT 49, 51) are located. It was also in a position to command the low fenland of the Laggan, probably still attractive for hunting. Neolithic settlement on hilltops would be in keeping with evidence from other parts of Britain, but in our area could remain undetected unless excavation takes place (cf. the Neolithic or early Bronze Age settlement likely at the hilltop site of Carwinning, Dalry, Ayrshire (AY 23) (Cowie, 1979)), another site where

pitchstone was found. As has already been noted (6.4.2) there may also have been settlement in the upland area around Gryfe Reservoir in the Renfrewshire hills where Newall (1974, 9) reported evidence of hut structures (AY 4, 5).

#### Early Bronze Age

As we have seen (3.6.2) the survey of areas in west Arran by Mercer (1976, 1978) was an exception in an area of study where systematic field survey has been largely absent. The subsequent excavations carried out by Barber (Barber 1980 and forthcoming, Barber 1982) have added considerably to knowledge of Bronze Age settlement, land use and farming activity. In two of the three areas where excavation took place the evidence suggested the possibility of continuity of settlement or activity from the later Neolithic. At Machrie North (AR 5), where a very detailed topographic survey was carried out, a very large number of features was discovered. A rectangular house situated on a hillside terrace was occupied in the early Bronze Age, perhaps also in the later Neolithic. The house was not unlike house A at Lough Gur (Barber pers. comm.). Associated with this house was a pit containing sherds of globular round-based vessels which Barber (pers. comm.) considered to be within Manby's definition of Grooved Ware (1974), as well as sherds of AOC Beaker pottery. Collapsed stone walls or 'rickles' in the vicinity, such as were found at Beaghmore (Barber pers. comm.), were considered to be of the early Bronze Age or earlier. On a terrace to the east of the house cairns were numerous and comprised both clearance and burial cairns, one of which contained a Beaker (fig. 7.3). Burnt mounds were numerous in this area, and seven radiocarbon dates from these were all within 50 years of 1850 bc (Barber pers. comm.).



At Tormore (AR 10), on the west side of the Machrie catchment, in an area where there were also cairns and field boundaries, hut circles were numerous and two were excavated. At site 1 the earliest phases were of the early Bronze Age. This was indicated by the finding of AOC Beaker sherds in the lower levels beneath a horizon dated  $1538 \pm 60$  bc (GU-1176). Ard marks indicated contemporary cultivation. Occupation continued through the Bronze Age and late Bronze Age levels dated to  $1015 \pm 100$  bc (GU-10 74) contained a large quantity of burned grain. This had been stored in the hut when it burned down. Also preserved were the remains of a tethered cow. At site 4, where the hut had also been occupied during the early Bronze Age, a ditch which surrounded the site may indicate an earlier phase. Discarded implements were found in clearance cairns and one cairn in this area contained a hoard of flints.

Although the areas investigated lie on hill slopes surrounding Machrie moor, the survey evidence indicated that there was also settlement in the vicinity of the stone circles. The ceremonial monuments appear to have been quite closely integrated into the settlement and farmland (Barber pers. comm.), and owe their prominence and visibility to their location on the crest of the slightly elevated ridge of sandstone, as has been noted above (5.3.4, 5.6.5), with any separation from the secular areas, such as was discussed by Barnatt and Pierpoint (1981), being small-scale. This may be seen in a map of the area (Barnatt and Pierpoint 1983, fig. 1) (shown in the caption to fig. 8.6), and is supported by the evidence from recent investigations at circle I (Haggerty 1985, 1986) that the area on which the circle stands was used for farming before the circle was built, and that there were signs of land division at this time. The finding of an earlier timber setting in the same position

suggests a long life for this monument before the area was eventually used again as farmland after the stone circle fell into disuse. At circle XI, also investigated, the relationship of a timber setting discovered by Burl (1980b) to the stone circle remains uncertain.

The third area investigated by Barber (1980 and forthcoming, Barber 1982) was at Kilpatrick south of Blackwaterfoot (AR 38). Settlement evidence was of late Bronze Age, but an early Bronze Age presence was indicated from the burial cairns investigated. A small kerb cairn contained a small cist from which an AOC Beaker (7.5.2, fig. 7.3) had been removed in antiquity and broken among the cairn stones. Here the pre-cairn surface was radiocarbon dated to 1885 $\pm$ 55 bc (GU-1177), and ard marks in the brown earths indicated contemporary cultivation.

### 6.5.3 Discussion

Although the evidence is limited, there is the suggestion that both lowland and upland settlements may have existed in the Neolithic. This need not necessarily be interpreted in terms of permanent communities in upland areas, but could reflect seasonal movement of people and animals to open upland areas which offered summer grazing, or the use of these areas for the hunting of fauna such as red deer which keep to higher ground at that time.

Interesting features of the evidence for the Bronze Age in west Arran are the close relationship which is apparent between settlement, farmland and monuments, and the evidence that clearance cairns often became the focus of burial or the deposition of implements or hoards.

## 6.6 Résumé and Discussion

### 6.6.1 Introduction

The historical and regional perspectives presented above have afforded important insights into the way of life and relationship to the environment of communities within the Firth of Clyde, and the ways in which these may have changed through time. It may be useful here to summarise conclusions relevant to discussion of the monument record which will follow in chapter 8.

### 6.6.2 Historical Perspective

Land use traditions established through Mesolithic exploitation patterns are likely to have involved the use of major resource spaces, such as the coastal areas of Ayrshire, along with marginal areas more suited to seasonal exploitation. These might be inland areas of the mainland and the islands and peninsulas of the Firth. There are reasons to suppose that Arran may have been particularly attractive through its range of habitats and the presence of pitchstone.

We have seen that Mesolithic society may have been in some ways prepared for the introduction of farming, and that this could have come about through existing networks of coastal interaction. The techniques and resources may have been brought by newcomers, or acquired by the existing population through contact with farming people, their way of life and possessions. Acquisition in this way could have been encouraged if there was a perceived need to compensate for some lessening of



resources in estuary and lagoon areas as land recovery took place. In either case a critical period of 'forager-farmer' interaction (Orme 1979) is likely to have followed.

The restructuring of social relations in the move to sharing the agricultural year has already been mentioned (1.2.4), and the changes which this may have involved will be taken up further in chapter 8. However mention should be made here of an important change which seems to have taken place at this time within the area of study. This is extension of settlement. As we have seen, the palaeobotanical evidence for Arran suggests that it was the introduction of agriculture which marked the beginning of continuous and intensive use of the island. Insight into the process of colonisation in the Firth of Clyde may be drawn from the work of Cherry (1981) on settlement of islands in the eastern Mediterranean. Cherry found little evidence for pre-agricultural colonisation, although the islands could have been settled at a much earlier date. The evidence for Melos (Renfrew and Wagstaff 1981) suggests that following the discovery of obsidian temporary visits were made, such as may have been made to Arran, to exploit resources, and this continued for a long period before the first settlements of farmers were established. Subsequent colonisation within the Firth of Clyde follows a pattern similar to that suggested by Cherry. The larger islands, Arran and Bute, along with the peninsula of Kintyre, were first to be colonised. Infilling of the smaller islands came later. The Cumbraes, Inchmarnock and Gigha lack megalithic cairns but have burial evidence from the Bronze Age.

As long as 'complex foraging' persisted there may have been little incentive to move away from the major resource spaces of the mainland

coast (Binford 1968, Cherry 1984, Zvelebil 1986). Colonisation would have been encouraged if, as Binford has suggested, there was an increase in population as communities became less mobile. However for the study area demographic evidence is lacking. The islands and peninsulas of the Firth may have come to seem less risky and more attractive for settlement if a varied economy continued through the introduction of farming. This has been suggested from detailed assessment of the prehistoric environment and the potential for early agriculture of the areas surrounding Sliddery Water and East Bennan chambered cairns (ARN 17 and Arn 14) (Perry 1983; Davidson 1983), and would be in keeping with findings at Quanterness, Orkney (Renfrew 1979). We have seen that within the island of Arran a particularly wide range of resources is likely to have been available (6.2.3), as well as open woodland offering opportunities for the initiation of pastoralism (6.3.2) and areas of easily cultivated soils (5.4.3, 5.4.4). Rowley-Conwy (1983, 125) has pointed out that most of the smaller, seasonal camps of the Ertebølle have 'regular Neolithic levels', suggesting that particular, localised resources remained important to early farmers in Denmark. Sloan (1984) has pointed out the continuing use of the specialised resources of some shell middens in central Scotland. Another factor which may be noted here is the increase through time in the exploitation of Arran pitchstone. A peak in distribution of cores seems to have been reached during the third millennium bc (e.g. Marshall 1978). This suggests more people moving around the Firth of Clyde, and an increasing level of contact and interaction. It may be that an involvement in regional exchange systems also contributed to the initiation of settlement on the islands and peninsulas of the Firth (c.f. Cherry 1984).

### 6.6.3 Regional Perspectives

It has been suggested that the potential of the present palaeobotanical evidence as an indicator of farming activity within the area of study may be variable. For some parts of the study area evidence is altogether lacking. For others the information comes from studies which are not radiocarbon dated or which lack the precision of recent work and the guidelines suggested by more recent discoveries. There is a possibility that Neolithic activity may not have been fully registered in the pollen analytical evidence presently available for lowland Ayrshire. This suggestion receives support from the Neolithic activity in Ayrshire indicated from the distribution of polished stone axeheads. It seems that at regional level Neolithic activity may have been registered in different ways.

A strong feature of the palaeobotanical evidence is the detailed picture of activity on Machrie Moor. This allows important links to be made with the archaeological record. One finding is that Mesolithic patterns of exploitation are likely to have been continuing during the period in which farming was introduced. A second is that the introduction of farming on Machrie Moor probably took place before the appearance of Neolithic monuments on Arran. Indeed, as will be discussed in chapter 8, the monuments may have appeared as the impact of farming in environmental and social change is likely to have been becoming apparent. A third is that the intensification of agricultural activity in the Bronze Age took place during the use of the large ceremonial monuments - the stone circles - and at a time when social change is suggested from



the appearance of Beaker pottery.

#### 6.6.4 Conclusion

The evidence examined in this chapter has revealed something of the history and a few glimpses into the cycles and routines of everyday life of Neolithic and Bronze Age communities in the Firth of Clyde - the 'submerged history' (Braudel 1972, 16) against which the more conspicuous features of the archaeological record, the monuments and artefacts of the archaeological record, existed and must be understood.

## CHAPTER 7

### THE NEOLITHIC AND EARLY BRONZE AGE IN THE FIRTH OF CLYDE - THE EVIDENCE OF ARTEFACTS

#### 7.1. Introduction

The discussion of artefacts in this chapter is intended to complete the background studies against which the monument record of the Neolithic and early Bronze Age in the Firth of Clyde, the central theme of the thesis, will be considered in chapter 8. The aim is therefore a broad treatment structured around a selection of key artefacts, which will cover their distributions and the contexts in which they occur, take account of chronology where appropriate and examine changes which take place through time as well as the contacts and interactions within the Firth of Clyde and beyond. For details of artefact typology and classification the reader is referred to the data file, and it may be noted that there artefacts are coded as described in the Notes to Appendix 1, so that the potential exists for a more detailed study than is possible within the scope of the present work.

#### 7.2 Artefacts of the Neolithic - Chambered Cairns

##### 7.2.1 Introduction

The range of pottery and other artefacts found in the 'Clyde' cairns is described by Scott (1969a, 198-222) and by Henshall (1972, 100-10).

Selected artefacts are illustrated in figures 7.1, 7.2.

As Henshall has noted (1972, 85-7) the quantity of pottery and other finds associated with the 'Clyde' cairns is very variable. To some extent this would be expected in view of the rifling and disturbance of the chambers after the cairns were no longer used. However there is also evidence that the contents of the chambers may have been removed and deposits disturbed while the cairns were in use before the final filling and sealing of the chambers took place (Henshall 1972, 165-6).

### 7.2.2 Pottery of the Earlier Neolithic

The pottery of the earlier Neolithic of the Firth of Clyde illustrates very clearly the problems which currently inhibit the definition of sequences and styles for Scottish assemblages (Sharples 1981, Kinnes forthcoming). The ceramic record is dominated by chambered cairn material, and there are no large assemblages, such as are available for example for Unstan Ware, to which apparent successions in isolated deposits in the chambers of the 'Clyde' cairns may be related. Nor are the few radiocarbon determinations (table 6.1) a basis for chronology (cf. Smith 1974, 106 and fig. 13). The few small assemblages of pottery from settlement contexts afford very limited comparison with chambered cairn material. Similarities are evident, notably the occurrence of the Rothesay style bowls in both settlement and cairn contexts. However differences may also be suggested. For example, Scott (1978, 57) has noted that it is not easy to find parallels in chambered cairn material for the Auchategan pottery which he found to be 'almost uniformly Grimston in character'. Some similar sherds were present among



the pottery from phase 1 at Balloch Hill, Kintyre, (KT 48) also a probable settlement context (Peltenburg 1982) (6.5.2). Scott explained the distribution of Grimston style pottery, peripheral to the distribution of 'Clyde' cairns, in terms of a 'Clyde facade' of closely integrated communities resistant to and diverting influences from the east (1978, 59-60). However the difference in context - settlement or chambered cairn - could also be significant.

At a more general level it seems best, as Smith has suggested (1974, 116), to regard the more elaborate forms and the use of decoration seen in the Rothesay style (Scott 1977) or the Beacharra bowls (sensu Henshall 1972, 102, 172-6) of the Firth of Clyde as part of the trend to regional specialisation within the widespread Grimston-Lyles Hill tradition (cf. Smith 1974, 108-11). Evidence from the south also suggests that it is likely that the plain pottery need not have priority over decorated styles (Smith 1974, fig. 17 cf. Bradley 1984a, 28-9).

With these probabilities in mind it has seemed best to set aside the four-stage typological sequence proposed by Scott (1964, 150-8; 1969a, 198-204), and his definition of Beacharra pottery, in classifying the earlier Neolithic pottery from sites in the data file (Notes to Appendix 1). In Scott's typology simple forms and plain pottery were in general taken to precede developed and decorated forms. The Rothesay style, regarded as an important influence on development, was seen as an intrusive element. Moreover the typology depended on chambered cairn assemblages whose insecurity of context has already been mentioned. It was further supported by links to the typological development through time which Scott envisaged for the 'Clyde' cairns (1969a). Chambered cairn typology will be considered below (8.2.4:F) where alternative approaches

will be suggested. Categories used have therefore been based on vessel form, in line with Henshall (1972, 100-4 cf. Kinnes forthcoming). The term Rothesay style has however been retained (Scott 1977) for bowls of Henshall's Achnacree group in view of the strong link which Scott has demonstrated with the Firth of Clyde region. The term Beacharra is restricted, as by Henshall (1972, 172-6) to decorated bipartite bowls with closed mouth as found at the type site (Scott 1964). The categories defined are thus as follows: plain bowls and cups, plain lugged bowls, carinated forms, Rothesay style vessels and Beacharra bowls.

The development of a regional pottery style, such as outlined above does not preclude contact with and influence from outside, and input into a regional tradition is a more plausible explanation for the variety and range of contacts along the western seaboard of Scotland, and further afield with communities in Ireland or England, which have been suggested from study of the earlier Neolithic pottery of the Firth of Clyde (Scott 1969a, 1977, 1978; Henshall 1972, 172-6), and would be in keeping with the developing networks of exchange and interaction envisaged above (6.2.2, 6.2.3) from the evidence for the exploitation and movement of Arran pitchstone.

### 7.2.3 Artefacts of the Later Neolithic

The distinctive and specialised nature and distribution of Grooved Ware pottery, which appeared in the second half of the third millennium bc, was discussed above (1.2.6) (MacKie 1977, Whittle 1981, Thorpe and Richards 1984). On current evidence the presence of Grooved Ware in the Firth of Clyde remains shadowy. It is known from the settlement at

Townhead, Rothesay (BU 39) (Marshall 1930, Scott 1977), and sherds have been reported from occupation contexts elsewhere, as well as the sherds found at Machrie North, west Arran (AR 5) (Barber forthcoming) (6.5.2). This, together with the finding of Grooved Ware sherds in the recent excavations at circle 1, Machrie Moor, Arran (AR 21) (Haggarty 1985, 1986) (6.5.2), indicates that the Firth of Clyde was not wholly excluded from the Grooved Ware network. A significant occurrence is at the chambered cairn of Tormore I (ARN 4) (AR 28) (Bryce 1902, 95-102). Here sherds from a Grooved Ware bowl were found in the same chamber as a polished stone macehead, of distinctive black and white gabbro, and two finely worked plano-convex flint knives (Henshall 1972, 371-3; Roe 1968, 150, 154) - a grouping of objects which suggests some personal control over prestige items (plate 23). Henshall (1972, 108-9) distinguishes the elaborately pressure-flaked plano-convex flint knives of the 'Clyde' cairns, some of which have ground or polished edges, from 'poorer' knives made by trimming the edge of a suitable flake (cf. McInnes 1970). It was pointed out by Wickham-Jones and Collins (1978, 8) that 'craftsmen would have to use imported stone' for some of the large flaked knives. Here we may recall that Callander (1917) considered that partly worked flint flakes found in two hoards in the Rinns of Galloway were of flint from northern Ireland. The occurrence of these specialised knives is concentrated on Arran, with other examples from Dunan Mor (ARN 8) (AR 63), Torlin (ARN 15) (AR 43), Sliddery Water (ARN 17) (AR 40) and a unique group of three from Giants' Graves North (ARN 11) (AR 54) (Bryce 1903, 44-52; Henshall 1972, 384-5). The four finely worked leaf-shaped arrowheads, which include one of ogival form, also found in the north compartment at Giants' Graves equally suggest the acquisition of quality



flint and a command of craftsmanship (Green 1980, 215), but may date from earlier in the Neolithic (Green 1980, 93). The range of artefacts associated with the blocking and filling of the chambers of the Neolithic cairns includes a jet slider found at Beacharra (ARG 27) (KT 13) (Bryce 1902, 102-9; Scott 1964; McInnes 1968, 140, 144; Henshall 1972, 344-6), one of a small group of specialist-produced artefacts in a rare material, possibly current only during a short period.

In summary, the later Neolithic artefacts from the chambered cairns suggest that leading groups among the communities in the Firth of Clyde were involved in specialist networks of exchange. There is some concentration of complex items on Arran. This would be in keeping with the island's growing position as a centre of communication and interaction. The exotic items in the chambers of some cairns, which suggest the display of status and prestige, may mark a shift towards a more open recognition of the power of emergent leading groups.

### 7.3 Polished Stone Axeheads

#### 7.3.1 Introduction

In section 6.4 the distribution of polished stone axeheads in the area of study was examined as an index of Neolithic activity (fig. 6.2). Two other aspects remain to be considered - polished stone axeheads as indicators of exchange and interaction, and their contexts of deposition.

#### 7.3.2 The Axe 'Trade'

Local sources of rock are likely to have been used for many of the stone axeheads found in the area of study, and it is possible that local networks of exchange may have been quite complex (8.2.4:E). No regional study of possible sources has been undertaken, and movement of material within the region could be difficult to document (Livens 1959). At national level work on Scottish axeheads has been concentrated on attempts to isolate and section products of particular axe factories. Axeheads of group VI and group IX have been found in the area of study. Available evidence suggests that both are likely to have been in circulation in the third millennium bc - Group VI possibly from the first quarter with Group IX probably coming into circulation a little later (Smith 1979).

The axeheads of Group IX, of porcellanite from Tievebullagh and Rathlin Island, Co. Antrim, north-east Ireland, represent imports arriving in the area of study by sea, and demonstrate contact between north-east Ireland and the Firth of Clyde. The majority of Group IX axeheads are found in north-east Ireland, but a thin scatter occurs elsewhere in England, including the south, as well as in Scotland (Jope 1952). In Scotland they are known from the Hebrides and Orkney as well as in the south-west, and there is a concentration in the north-east (Ritchie 1968). Ritchie and Scott (1981) suggest that, with the programme of identifications for axeheads of Group IX well forward, this general pattern of distribution is not likely to change. The distribution suggests a wide network of social interaction.

The Great Langdale axeheads of Group VI seem the most numerous of all the presently identified stone axe groups and occur throughout the British Isles, with large numbers identified on parts of the east coast of England. For Scotland progress with sectioning of probable Group VI

axeheads is not yet complete (Ritchie and Scott 1981), and a comprehensive distribution map is not available at the time of writing. However Ritchie and Scott suggest that for the area south-west of the Firth/Clyde isthmus the sample is probably fairly representative. The occurrence of Group VI axeheads in the area of study would be in keeping with a pattern of fall-off in distribution with increasing distance from source as suggested by Frame (1978, 24, fig. 21), but for Scotland as a whole this suggestion may be premature pending completion of sectioning. Frame makes the interesting suggestion (1978, 28) that there may have been a secondary distribution outlet to the islands of the Firth of Clyde somewhere around Luce Bay. In more general terms the presence of Group VI axeheads in the Firth of Clyde demonstrates the existence of another long distance contact for the Firth of Clyde in the Neolithic, which again was linked into a complex web of inter-relationships among the communities of the British Isles.

### 7.3.3 Deposition

It has usually been assumed that finds of stone axeheads represent chance losses or discard, and deliberate deposition is difficult to establish. In the area of study the rarity of finds from the chambers of the Neolithic cairns suggests that axeheads were not selected for deposition in burial contexts. Only one example seems certain, from the chambered cairn of Clachaig (ARN16) (AR 41) (Henshall 1972, 109-10). This axehead (ARN 11) is of local stone, but in form resembles Langdale axeheads. The finding of two other axeheads in the vicinity of this cairn (Bryce 1910, 276), and the group of axeheads (ARN 1-6) associated with



Giants' Graves North (ARN 11) (AR 54), may suggest that axeheads were sometimes deposited in the vicinity of monuments, but the possibility remains that these represent chance losses in areas which were frequented. As Livens has pointed out (1959) the group of axeheads associated with Giants' Graves North, which comprise four of Group VI, one of Group IX and one of basalt, cannot be certainly associated with the Neolithic cairn or with each other. Ritchie (pers. comm.) considers it more likely that they were found in the vicinity of the cairn. If this is so they come from an area in which, as will be discussed below (8.2.4:B), there is a close grouping of three Neolithic cairns - Giants' Graves North, Giants' Graves South (ARN 19) (AR 53) and Torr an Loissgte (AR 55) (Fairhurst 1981, 18).

#### 7.4 Pitchstone

The frequent occurrence of pitchstone in the Neolithic cairns of the area of study (Henshall 1972, 109) supports the suggestion made above (6.5.2), from the finding of pitchstone in settlement contexts, that the exploitation of Arran pitchstone, begun in the Mesolithic, may have reached a peak in the Neolithic. However there is also evidence for its continuing distribution in the early Bronze Age. Pitchstone finds from early Bronze Age contexts include worked material associated with the Food Vessel burial inserted into the chamber of the cairn at Brackley (ARG 28) (Scott 1956, 6), pitchstone reported from Knockjargon, Ayrshire (AY 39) by Crew, from a cairn described by Morrison (1978), and also from Carwinning, Dalry (AY 23) (Cowie 1979). Outwith the area of study finds of pitchstone have been noted in Neolithic and early Bronze Age contexts (Thorpe and Thorpe 1984, fig. 3, Appendix 1) from locations which suggest

that pitchstone was being moved over much of Scotland and into the north of England. Examples examined and traced to Arran sources by Thorpe and Thorpe (Appendix 2) include finds from Ord North chambered cairn, Sutherland, North Mains henge and barrow, Strathallan, Perthshire (Barclay 1983) and Brackmont Mill cremation cemetery, Fife (Ritchie 1968). That the distribution may extend to Orkney is suggested from the finding of worked pitchstone, likely to have originated on Arran, in the settlement recently excavated near the Stones of Stenness (Richards, pers. comm.).

## 7.5 Beaker Pottery

### 7.5.1 Introduction

Mention was made above (1.2.6) of recent approaches to interpretation of Beaker pottery in the British Isles (Burgess and Shennan 1976, Thorpe and Richards 1984). Burgess (1980, 62-64) and others (Kinnes, 1979, Whittle 1981) have stressed the continuity suggested by evidence for settlement and economy as well as the recognition that aspects of burial practices and ritual, traditionally linked with the appearance of Beaker pottery, could be seen to pre-date their arrival. While this continuity is recognised, changes in social and political organisation must be indicated from the control of prestige items which the appearance of Beaker pottery suggests. This is seen in changes in burial practices which will be discussed for the area of study below (8.4.4).

### 7.5.2 Area of Study (fig. 7.3)

The application of the scheme of Lanting and Van der Waals (1972) to south-west Scotland, which lies outwith the main foci of Beaker development, was considered by Ritchie and Shepherd (1973), following a study of the Beaker pottery by Ritchie (1970), and has also been considered in discussion of the Beaker pottery of Ayrshire by Morrison (1978). In 1970 Ritchie recognised four broad categories of sites on which Beaker pottery is found, all of which are represented in the area of study: sand-dune and settlement sites, Neolithic cairns, Bronze Age cairns and cists and ring cairns.

Only one sand-dune context is known, at Shewalton, Ayrshire (AY 53) (6.4.2), where All-Over-Cord sherds of steps 1 and 2 were found (MacNeill 1965b, 14; Ritchie 1970, 141), but Beaker sherds also occurred at Gryfe Reservoir (AY 4) (6.4.2) (Newall 1966, 46; 1974, 9; Ritchie 1970, 146). Continuity with Neolithic activity seems suggested in both these cases. To this material from settlement contexts may be added AOC Beaker sherds found in the lower levels of a hut circle excavated by Barber (forthcoming, Barber 1982) at Tormore, west Arran (AR 10) (6.5.2). These lay beneath a dated horizon of  $1538 \pm 60$  bc (GU-1176) (table 6.1).

Beaker pottery occurs in several Neolithic cairns in the area of study (Henshall 1972, 105-6, 187-91). At Dunan Beag (ARN 7) (AR 62), where a triangular necklace terminal and a pendant of jet were also found, the Beaker, placed in step 6 by Ritchie and Shepherd (1973), is of a squat form with Food Vessel affinities. Beaker pottery was also found at Glecknabae (BUT 4) BU 8), and Beaker sherds are known from Giants' Graves North (ARN 11) (AR 54) and Dunan Mor (ARN 8) (AR 63).

Most of the limited Beaker pottery from the area of study comes from Bronze Age burial monuments, the cists and cairns or ring cairns which are



described and discussed below (8.4). Our knowledge of Beakers in these contexts has also been increased since Barber's excavations in west Arran. Beaker pottery was found in cairns excavated both at Machrie North (AR 5) and Kilpatrick (AR 38) (Barber 1980 and forthcoming, Barber 1982). At Kilpatrick the ground surface below a small kerbed cairn covering a cist, from which an AOC Beaker had been removed in antiquity, was dated to  $1885 \pm 55$  bc (GU-1177) (table 6.1).

It is from this limited burial material that we must also assess the appearance in the area of study of Beakers of the remaining steps. Ritchie and Shepherd (1973) suggest for step 3 only the Beaker from the cairn at Courthill, Dalry, Ayrshire (AY 25) (Cochran-Patrick 1874, Ritchie 1970, 139). This is in keeping with a sporadic occurrence of Beakers of steps 3 and 4 in the south-west, where the majority of Beakers belong to steps 5 and 6, Clarke's Northern British series. Outstanding examples are the only two Beakers known from Kintyre - a long-necked Beaker from Dalaruan Street, Campbeltown (KT 64) (Gray 1894, Ritchie 1967) and a short-necked Beaker of step 6 from Balnabraid cairn (KT 57) (Ritchie 1967). Ritchie notes that the decoration on the Balnabraid Beaker resembles that of Food Vessel pottery. The disc beads of jet which accompanied it are often found in a Food Vessel context, as at the cairn of Brownhead, Arran (AR 39) (Bryce 1902, 588). Beakers of step 5 may be contemporary with metalwork of the Migdale tradition (7.8.2). This is indicated from the bar armlet found in a Beaker context at Crawford, Lanarkshire (Anderson 1883, 451) (Ritchie and Shepherd 1973).

Indications of absolute chronology for later Beakers are few, with no radiocarbon dates for the area of study. Radiocarbon dates of  $1654 \pm 70$  bc (BM-706) and  $1531 \pm 54$  (BM-707) for two levels at Northton, Harris,

containing Beaker pottery of Clarke's Northern British series (Burleigh et al. 1973), indicate dates for step 5 Beakers. It may be best for the area of study to bear in mind Case's simpler classification (1977) by style - early, middle and late. Most of the Beakers from the area of study would fall into Case's late period, which Whittle (1981) has suggested lasted from 1800/1700 bc until 1500 bc or later. Case's point that AOC Beakers of step 1 persisted into the middle phase alongside Beakers of steps 2, 3 and 4 is also pertinent in view of the period which is suggested for AOC pottery from the recent determinations for west Arran.

The very specialised nature of Beaker pottery lies in the sharing of vessel form, design and decorative motif on a west European scale, although the contexts in which these were used may vary. The acquisition of Beaker pottery suggests that the Firth of Clyde region was linked to restricted networks of long distance exchange. The broken sequence may suggest intermittent connection to the Beaker network, and the predominance of late Beakers might suggest that Beakers were acquired, perhaps through emulation, at a time when Beaker pottery was being downgraded and there was a rise of Food Vessels as prestige pottery (cf. Bradley 1984a, 70-82). The strength of the Food Vessel tradition in the area of study, already mentioned, may reflect the pottery traditions and networks of interaction established in the region in the Neolithic.

## 7.6 Food Vessels

### 7.6.1 Introduction .



Food Vessels, a feature of the Highland zone of Britain, are described by Burgess (1980, 80-89). They form a rather ill-defined group of pottery, which overlaps later Beaker pottery and occurs in a period which also sees the expansion of Cinerary Urn pottery discussed below (7.7). Megaw and Simpson (1979, 230-37) describe the range of form and decoration in Food Vessels as arising from two basic and originally distinct groups - Irish bowl and Yorkshire vase. This reflects the move in recent work away from rigid detailed typologies towards a more flexible approach (e.g. Waddell 1976, Pierpoint 1980), as has been used in the data file for this study. Regional trends in decoration are recognised, and significant regional styles distinguished (Pierpoint (1980). Simpson (1968, 209) found the recurrence of grave goods with Food Vessels less consistent than with Beaker pottery. Others (e.g. Green 1980, 130, 192) would recognise a regularity in the occurrence of personal ornaments and tools which led Childe (e.g. 1946, 8-10) to define a Food Vessel culture.

#### 7.6.2 Area of Study (fig. 7.4)

Food Vessels of the mainland of south-west Scotland were discussed by Simpson (1965) and Ayrshire Food Vessels were noted by Morrison (1978). Radiocarbon dates for Food Vessels within the area of study are lacking. However recent determinations for a number of sites in central and east Scotland (Ritchie and Ritchie 1981, 67; Stewart 1973, 1975; Barclay 1983, 259) consistently support their currency in the Overton period, c. 1700-1450 bc (Burgess 1980), and a similar period of use is suggested from the range of dates for Food Vessel pottery from a domestic context at



Ardnave, Islay which included a tripartite bowl (Ritchie and Welfare 1983, 320). Where details of finding are known, Food Vessel burials have usually been found in cists, often, but not always, with a covering cairn, and may occur singly or in cemetery contexts (8.4). The insertion of Food Vessels into Neolithic cairns is also known. In Ayrshire Morrison (1978) notes that bowl and vase Food Vessels are known in almost equal numbers. Further west in the area of study, in the islands and peninsulas of the Firth of Clyde, the bowl tradition predominates (Scott 1971), with vessels similar to the Irish bowls recently discussed by Waddell (1976).

#### The Bowl Tradition

Food Vessels of the bowl tradition are found widely in coastal areas, and the close relationship of Scottish with Irish vessels was demonstrated in a study of tripartite bowls by Young (1951). It has been suggested that there may have been direct contact (Burgess 1980, 87), perhaps including the transportation of vessels. Pierpoint (1980, 120), discussing the similarities of fabric and design among the tripartite bowls, suggested that 'many of the vessels are likely to be the product of one or two workshops'. Origins in Neolithic pottery are often suggested, but the combed decoration and repeating horizontal patterns resemble late Beaker pottery, and the consistent use of square-tooth comb decoration emphasised by bands of 'false-relief' zig-zag patterns suggests recognised design modules.

Among the vessels from the area of study which are classed as Irish bowls one group stands out as distinctive to the Firth of Clyde. These are the Machrie Vases distinguished by Scott (Davidson and Scott 1967). The locations and contexts in which these vessels are found are discussed below (8.4.4:E). They are distinctive in that they follow the tripartite

bowl in shape and in decoration, but show an increase in height appropriate to the vase rather than the bowl tradition. Scott, writing in 1967, discounted the possibility of Beaker elements on the grounds of chronology, and suggested links with Cordoned Urns. Ritchie and Shepherd however (1973) have traced a development of Machrie Vases from tall Beaker-Food Vessels such as were discussed by Simpson (1965), placing the Balnabraid and Doonfoot vessels in a sequence of development alongside step 7 Beakers, (1973,26 and fig. 2).

In the area of study artefacts associated with Food Vessels are not prolific, and it is interesting to note that artefacts were associated with these distinctive Machrie Vases. At Mount Stuart, Bute (BU 34) (Bryce 1904, 63-69) the Machrie Vase accompanied the crouched inhumation burial of a young woman. An almost complete spacer-plate necklace, a bronze pin and fragments of possible skewers were also found. Parts of two jet necklaces, one of normal size and one miniature, a plano-convex knife and other flints and pitchstone were associated with the cremation overlain by a Machrie Vase which had been inserted into the chamber of the Neolithic cairn at Brackley (ARG 28) (KT 76) (Scott 1956, 38-44). Flint flakes were found with the Machrie Vase burial in circle 2 at Machrie Moor (AR 20), and flints and perhaps a bronze awl with the burial at circle 4 (AR 18) (Bryce 1910, 113-8). At Doonfoot (AY 73) (Davidson and Scott 1967) a polished flint knife was found at the mouth of the Machrie Vase. Only the Balnabraid vessel, which accompanied a cremation, seems to have had no associated finds (Ritchie 1967).

#### The Vase Tradition

The Food Vessels of the vase tradition in the Firth of Clyde suggest a range of short distance contacts as well as influences from further



afield. For example Pierpoint (1980, 120) suggested that Ayrshire may have had 'short distance trade' with both Lanarkshire and Northumberland. Stops on some vessels suggest Yorkshire vase connections. The Food Vessel from Auchenhavie, Stevenston, Ayrshire (AY 42) was seen by Morrison (1971) as close to Yorkshire and Derbyshire types, while for one from Townhead, Stevenston, Ayrshire (AY 44) Morrison suggested a blend of Yorkshire Vase and Irish Bowl elements (ApSimon 1959).

Yorkshire connections at this time could also be suggested, from the very specialised raw material and craftsmanship in jet, of necklaces such as the one from Mount Stuart (BU 34) mentioned above (Shepherd 1985), some of which have Beaker-derived decoration. Shepherd suggested that these may be the product of a limited number of craftsmen located near the high grade sources of jet at Whitby. Morrison (1979) has pointed out, however, that small deposits of true jet are known in Scotland, and that a range of materials associated with the Coal Measures (2.3.3) could also have been used, especially for undecorated necklaces (cf. Peltenburg 1979). A plain necklace and a flint knife were found with the inhumation burial of a woman in a cist at Inchmarnock (IS 9) (8.4.4:E) (Marshall 1963).

The evidence of burials with Food Vessels in the area of study is limited, so that the extent to which the two female inhumation burials with spacer-plate necklaces reflect distinctions made more widely between male and female at death is not clear. Nevertheless it may be suggested that the deposition of highly specialised artefacts made in a rare material, which, wherever it originated, possessed magical qualities, indicates the importance attached to the burial of some women by the communities of the Firth of Clyde. There are not many comparisons with male burials available within the area of study, although here we may



mention the unique dagger grave at Blackwaterfoot, Arran (AR 32) (Bryce 1902, 117-19), described below (7.8.2, 8.4.4:D).

## 7.7 Cinerary Urns

### 7.7.1 Introduction

Beaker pottery and Food Vessels, as we have seen, are accessory vessels which accompanied burials. The possibility that their contents may also have been important is suggested from the finding of the remains of fermented drinks in some vessels (Dickson 1978, Barclay 1983, 178-80).

Cinerary Urns on the other hand have a defined function as a container for the cremated remains of the dead, and do not appear in other contexts. Their appearance in the archaeological record from the beginning of the Overton period thus marks changes in funerary ritual. There is an increasing emphasis on cremation burial and in the Bedd Branwen period, c. 1450-1250 bc (Burgess 1980) cremation was the dominant form of burial. Radiocarbon dates for Collared Urns suggest that they were in use from c. 1800-1100 bc (Longworth 1984, 79).

### 7.7.2 Area of Study (fig. 7.5)

A corpus of the Cinerary Urns and Pygmy Vessels of the south-west mainland of Scotland was prepared by Morrison (1968), and the material for Ayrshire was reviewed again by Morrison (1978). Morrison noted the range of urn types represented. For the area of study the mixture of traditions is similar, and the main types remain the Collared, Bucket-shaped and

Cordoned. Cinerary Urns occur within the area of study in a range of burial monuments which will be discussed below (8.4.): in cairns, ring cairns, enclosed cremation and flat cemeteries. Solitary finds are not frequent, and this may reflect their fragility (8.4.3). It is possible that, in comparison with Food Vessels, Cinerary Urns may be under-represented in the archaeological record (cf. Barclay 1982). One other context may be noted: a cist containing a cremation burial covered by a Food Vessel Urn was inserted into cairn material at Glenvoidean (BUT 1) (BU 2) (Marshall and Taylor 1977).

Cinerary Urns, like Food Vessels, may have developed from Neolithic pottery traditions. An example is the Collared Urn (Longworth 1984). An early date for some of the Collared Urns of Longworth's Primary Series is supported by their association with axe-hammers, for example the perforated axe-hammer of diorite found at Largs (AY 10) (Morrison 1968, 6; Longworth 1984, Roe 1967, 17). Similarities with Collared Urns in the decoration, and perhaps the form, of a Food Vessel from Pun Brae, Stevenston, Ayrshire suggested to Morrison (1971) a connection between Cinerary Urn and Food Vessel such as has been discussed for Machrie Vases (7.6.2).

A striking feature of the Ayrshire Cinerary Urns is that the majority are of the Bucket-shaped type. Moreover these are concentrated at two sites - the flat cemetery at Nelson Street, Largs (AY 10) (Munro 1910) and a cairn cemetery at Ardeer, Stevenston (AY 46) (Mann 1906). Bucket-shaped Urns may have been used over a long period. A date in the Overton period may be indicated for the cemetery at Nelson Street, Largs, where the Bucket-shaped Urns were found in a circular cist-like structure with Collared Urns, some of the Primary Series, placed round about in what

seem secondary positions (Morrison 1968, 85). At Ardeer cairn four of the urns were considered by Morrison (1968, 85) to be related to Cordoned Urns. The finds from one of these (Morrison 1968, 21) included faience beads. The resemblances of some British beads to Egyptian ones is so close as to indicate at least some indirect contact. This would suggest their exclusiveness whether or not they were manufactured in Scotland or derived from Egypt.

Similarities with the Ardeer burials were noted in plain oval Cinerary Urns discovered during recent excavations at Balloch Hill, Kintyre, (KT 48) (Peltenburg 1982). A radiocarbon date of  $1410 \pm 70$  bc (HAR-1902) was obtained for the burials, one of which was accompanied by a Pygmy Vessel of the biconical form typical of south-west Scotland and northern Ireland. The date is in keeping with the date of  $1360 \pm 90$  bc (GaK-461) for a Pygmy Vessel found at Whitestanes Moor, Dumfries (Scott-Elliott and Rae 1965). It is surprising in view of the number of similar Pygmy Vessels known in Ireland that this is the only Pygmy Vessel known from the islands and peninsulas of the area of study. This may however be a reflection of discovery patterns, as will be discussed below.

Cordoned Urns are a tradition distinct from Collared Urns (ApSimon 1969 cf. Longworth 1984, 44), found mainly in north Britain and Ireland, but the main weight of their distribution is in Scotland (ApSimon 1969, 50). A coastal distribution in south-west Scotland was noted by Morrison (1968), with finds in Ayrshire along the coast from Seamill to Girvan, and the finds from the islands and peninsulas reinforce this impression, which would again be in keeping with contacts across the Irish Sea. Artefacts associated with the Cordoned Urns of the area of study are few. A stone



battle-axe (Roe 1967, 1) was found with a Cordoned Urn found in the West Kilbride area of Ayrshire (AY 37) (Morrison 1968, 10). At Balnabraid (KT 48) the Cordoned Urn found in cist 5 was accompanied by fragments of sheet bronze and a bone toggle (Ritchie 1967). A radiocarbon determination for a Cordoned Urn in a cremation cemetery at Grandtully, Perthshire gave a date of  $1270 \pm 100$  bc (GaK-603) (Burgess 1980, 392). Dates for two levels of occupation at Downpatrick, both of which were associated with Cordoned Urns were  $1625 \pm 70$  bc (UB-471) and  $1375 \pm 75$  bc (UB-474),  $1315 \pm 80$  bc (UB-473) (Pollock and Waterman 1964).

The number of Cinerary Urns found in Ayrshire (Morrison 1963) seems at first sight to be in contrast with the rather sporadic occurrences in the islands and peninsulas of the area of study. However, as Morrison points out (1978, 129), the Ayrshire distribution is dominated by the Bucket-shaped Urns from the two cemetery sites discussed above at Largs and Ardeer (AY 10, 46). A number of other Cinerary Urns have been found in this particular part of Ayrshire (Morrison 1968, fig. 1), and Smith, writing about the Seamill district of this part of Ayrshire, (1895, 8) noted that 'at certain spots one has only to dig perseveringly enough to unearth a cinerary urn; and the number of these which have been got, and as a rule broken, is quite astonishing ....', a description which calls to mind the finding of Cinerary Urns in Angus or Fife. From the regional perspective it would seem that Cinerary Urn finds show some concentration in this part of Ayrshire and occur more sporadically elsewhere. If the concentration in the Largs-Ardeer area is considered atypical, it may be suggested that the distribution of Cinerary Urns throughout the rest of the area of study is not out of keeping with what might be expected. More Cinerary Urns are likely to have come to light in Ayrshire, an area of

discovery (Stevenson 1975) (chapter 3), while more occasional finds in the islands and peninsulas would be in keeping with their restricted potential for discovery. An indication of a wider distribution may be the finds from Balloch Hill, Kintyre, (KT 48) discussed above, which were found by the chance of excavation in an area otherwise unlikely to be disturbed.

Whether the concentration of Cinerary Urns in this one part of Ayrshire reflects increased Bronze Age activity in that area or is an accident of discovery remains unclear. It may be that locally there came to be a greater awareness of the possibility of finding of urns. Chance may have played a part, for the flat cemetery at Largs was found during building operations (Munro 1910) and the cairn at Ardeer was revealed by erosion (Mann 1906). An interesting but currently enigmatic factor is the unconfirmed possibility mentioned by Slater (1974, 5) that tin-bearing cassiterite was found in 1927 in a foundation trench at Largs.

## 7.8 Metalwork

### 7.8.1 Introduction

We have seen that Food Vessels and Cinerary Urns were forms of pottery developed from traditions indigenous to the British Isles. The appearance of metal artefacts, on the other hand, is again indicative of interaction and exchange operating on a European scale.

It was noted above (1.2.6) that the appearance of metal artefacts in Britain is associated with the arrival of Beaker pottery, although in detail the relationship is not fully understood, and for Ireland remains



uncertain (Harbison 1980). It was also suggested (1.2.6) that the arrival of metalwork may have represented a new dimension in power and a challenge to those who relied on stone for fine implements. For one thing skill in metalworking represents a major leap in technology, with obvious opportunities for control of the resources and the skills, as well as the resulting metal artefacts. The transformation of one material into another which metalworking may involve clothes it in mystery, suggesting that those who possess the skills have control over magical powers. Acquisition of skills may have been restricted to the initiated, and knowledge of sources of raw materials limited, with only a few people involved in prospecting. Close control of production and circulation is therefore possible and the acquisition of metal artefacts could thus become a particular source of prestige.

Hoards have been a major source for study of Bronze Age chronology, based on typology and associations. Until recently less attention was paid to their interpretation. There was the assumption that they represented personal possessions or the stock of traders, mislaid or hidden, and that some in bogs, lakes or rivers represented 'votive' offerings. More recently it has been suggested that hoards may represent the deliberate withdrawal of prestige items from circulation in exchange networks (Bradley 1982, 1985; Barrett 1985), and that they thus constitute an alternative to deposition of wealth in graves. Barrett has pointed out (1985, 95) that a distinction between hoards as deliberate deposits and single finds as chance losses is inappropriate.

#### 7.8.2 Area of Study. (fig. 7.6)



A corpus and study of the early Bronze Age metalwork of Scotland was prepared by Coles (1969). There has been an absence of regional study of the metalwork of the south-west. The material for Ayrshire was considered by Morrison (1978) and a paper by Coles (1965) covers Dumfries and Galloway, outwith our area. In part this may have been because the south-west appears peripheral to the main production and distribution centres of metalwork of the Migdale tradition, which seem concentrated in the north and east. While these areas undoubtedly saw more intensive Bronze Age activity, they also represent, at Scottish level, major zones of discovery (Stevenson 1975). The earliest metalwork known from the area of study is of the Migdale tradition, which, as has already been noted is likely to have been contemporary with Beaker pottery of step 5 (7.5.2). This is supported by the D-shaped bar armlet (Coles 1969, 85) from the hoard found at Maidens, Port Murray, Ayrshire (AY 79) (Munro 1883, Coles 1969, 103-4), which is similar to one found at Crawford, Lanarkshire (Anderson 1883, 451).

#### Metalwork from Graves

Among the metalwork from grave contexts the most frequent finds are awls or pins of copper or bronze. A knife-dagger from Kilmaho (KT 40) (RCAHMS 1971, 50-51, Coles 1969, 89) is of a form in keeping with the Migdale tradition (Gerloff 1975, 51). To these may be added the band and bar armlets (Coles 1969, 88) from a probable burial context at Cairntable, Muirkirk, Ayrshire (AY 88) (Fairbairn (1934). There are only two known dagger grave contexts. Both weapons seem intended for ceremony and display. One is the ribbed dagger and gold hiltband from Blackwaterfoot (AR 32) (Bryce 1902, 117-19, Coles 1969, 90, 92). Gold is rare in Scottish graves. Moreover the hiltband is one of eight gold

artefacts of the Food Vessel phase which were made either from an unlocated source of gold in Scotland, or from a localised experiment in alloying gold with tin (Taylor 1983). Four of the eight objects were similar hiltbands, three found in Scotland and one in Ireland, while the four gold discs were found in Orkney. The ribbed dagger has features distinctive to Scotland, with the best parallel being the dagger from Skateraw, East Lothian (Henshall 1968). The other dagger is of midrib ogival type (Coles 1969, 90) and came from the Gas Works, Campbeltown (KT 64). It was probably associated with a Cinerary Urn burial, but the context is poorly understood. It is of the Camerton-Snowhill series (Gerloff 1975, no. 198). From this limited evidence it seems that rich 'warrior' graves were rare, and therefore, within the Firth of Clyde region, may have been very unusual expressions of individual power.

#### Metalwork from Hoards and Related Contexts

Halberds are also for ceremonial use, but are usually found as hoards or single finds. In the area of study a notable find is the hoard of three or perhaps five halberds (Coles 1969, 87, 105) found at Lubas Port on Bute (BU 25). The find spot is a coastal bay, and it may be noted that a group of standing stones is located in the same area (Hewison 1893, 80), a setting which might suggest deliberate deposition. The origin of halberds has been much debated. Recently (e.g. Burgess 1978) central European sources for Irish halberds have been rejected, and the tradition may, as Burgess has suggested, have travelled north on the Atlantic sea-ways. The connection of the Scottish halberds with their Irish counterparts is very close, and the coastal setting of the hoard in Bute would be quite in keeping with Irish-Scottish contact.

The only substantial hoard of metalwork of the Migdale tradition in



the area of study is the hoard found at Maidens (AY 79). Five axeheads, some broken at the cutting edge, were deposited with the armlet mentioned above (Coles 1969, 81, 103-4). Schmidt and Burgess (1981, 49-52) suggest that two of these may represent specialised wood-working implements. Nevertheless axes, which Barrett has suggested (1985, 103) (1.2.6) may be a core symbol, are the dominant feature, and the hoard may represent the deliberate removal of metalwork from circulation as was discussed above. It was found in a natural crevice in a rock face near the edge of the bay. Two axes, one with a broken cutting edge, were found below the ground surface at Craighdu, East Bannan, Arran (AR 45) (Coles 1969, 81, 105). The impressive location here might suggest deliberate deposition (cf. Gourlay and Barrett 1984), for the axes were found on the top of the hill on a headland which overlooks a Neolithic cairn (ARN 14) (AR 44) and commands a view over the sea to Ailsa Craig. Single finds of axes of the Migdale tradition include one found buried somewhere in Gortachan Moss, Kintyre (KT 44) (Coles 1969, 80), and a decorated axe from Bog Farm, Kilwinning, Ayrshire (AY 49) (Coles 1969, 81, Morrison 1978, 128).

Axes of Class I (Coles 1969) occur much more sporadically in Scotland than those of the Migdale tradition (Coles 1969, fig. 23 cf. figs. 9, 13, 15). In the area of study they are best known from the hoard found at Gavel Moss, Lochwinnoch, Renfrewshire (AY 8) (Coles 1969, 107-8), which comprised two decorated flanged axes (Coles 1969, 85) and a large ribbed dagger (Coles 1969, 90). The dagger, like the one from Blackwaterfoot, is comparable with the Arreton tradition of the south (Gerloff 1975, 134). This hoard was found during ploughing in 1790 along with what was described as 'armour'. Again this is an assemblage which might suggest deliberate deposition. Two other axes were found in the same area of



Ayrshire. One is a small axe from Ladyland, Kilbirnie, Ayrshire (AY 14), not far from Gavel Moss (Coles 1969, 81), classed by Coles as Class I, but considered by Schmidt and Burgess as of their Type Bandon rather than Balbirnie (1981, 67). Very similar in form to the Gavel Moss axes is an axe, first published by Schmidt and Burgess (1981, no. 404) from the Irvine area of Ayrshire (AY 50). The locations of all these metal finds suggest proximity to routes from Irvine by the Garnock and Kilbirnie Loch to the Clyde.

The context of the dagger found at Aird's Moss, Muirkirk (AY 85) (Coles 1969, 90) is uncertain, as is that of the tanged spearhead from Whitehaugh Moss, Muirkirk (AY 87) (plate 24) (Coles 1969, 88), which is of Arreton Type (Gerloff 1975, 253; Needham 1979, 33). Neither seems likely to have been lost by chance (cf. Barrett 1985, 95), and it may be observed that in this area of Ayrshire there is a concentration of Bronze Age burial monuments (8.4.4:C) as well as these prestigious metal finds. Again the sites are near to valley routes which connect Ayrshire with the upper Clyde and valleys to the south and east.

These finds from Ayrshire may remind us that the archaeological record of metal artefacts is likely to be far from complete for the islands and peninsulas of the area of study, where areas of discovery of small finds (Stevenson 1975) are limited (chapter 3), and much may remain undisturbed under peat. Only Ayrshire and Renfrewshire, potentially areas of discovery, may offer comparison with the north and east of Scotland. Here the evidence would support the conclusion that the area of study lies outside the main areas of distribution of metalwork of the Migdale tradition. Even more difficult to assess are sources of raw materials and areas of production. A useful map of known sources of gold and copper in

the south-west mainland was prepared by Morrison (1968, fig. 1), which shows metal-rich areas in the Galloway Hills, in the Wanlockhead-Leadhills area between the Clyde and the Nith and on the Garnock-Black Cart pass. Coles (1969) 29, figs. 25, 26) has noted that the distribution of known moulds for early Bronze Age metalwork is mainly in the north-east, and is in contrast with the known distribution of copper sources, located in the south-west. The occurrence of metal artefacts still suggests, as it did to Scott (1951), links between the deposition of metal artefacts and the routes which prospectors or other travellers might have used.

### 7.9 Conclusion

The artefact evidence suggests that there were strong traditions within the region. These are seen particularly in Neolithic pottery and in Food Vessels. Contact with networks of interaction and exchange may have begun with the exchange of resources in the Mesolithic indicated by the movement of pitchstone from Arran. Through time the Firth of Clyde became involved in networks of interaction and exchange which were increasingly more complex, specialised and wide-ranging, and for which Arran seems to have remained a focal centre.

## CHAPTER 8

### THE NEOLITHIC AND EARLY BRONZE AGE IN THE FIRTH OF CLYDE - THE RECORD OF THE MONUMENTS

#### 8.1 Introduction

In chapter 1 it was noted that monuments are the most prominent feature of the archaeological record for the Neolithic and early Bronze Age in the Firth of Clyde. It was seen that their nature suggests an ongoing concern and preoccupation with ritual and burial, and that ways in which this concern changes through time may be manifested in the different contexts of deposition (1.2.3). In chapter 3 the formation of the archaeological record was studied and in chapter 5 a systematic examination was undertaken of a range of location factors for six elements which appear in this monument record. It will be remembered that the monument groups chosen as type sites were the following: Neolithic chambered cairns, stone circles, standing stones, Bronze Age burial cairns, unmarked Bronze Age burials and cup-marked rocks. In this chapter the intention is to examine the record of these monuments as it developed through time. The six elements of the monument record will be considered in the three major sections of the chapter:

#### 8.2 Neolithic Chambered Cairns

#### 8.3 Stone Circles, Standing Stones and Cup-Marked Rocks

#### 8.4 Burial Sites of the Early Bronze Age

Each section will be introduced with a description, a short history of



research and discussion of chronology. The results of the analysis of location factors will then be summarised, and an assessment made of the likely pattern of survival, preservation or destruction, detection and recording for the monument under consideration within the area of study. These factors will be taken into account in the discussion sections which follow, in which the frequency, spatial distribution and location of the monument within the area of study will be examined, and there will be discussion of form and function. It has been stressed (e.g. 1.1, 1.2.4, chapter 6) that monuments cannot be considered in isolation from other evidence. It is therefore expected, as has already been suggested, that the historical and regional perspectives provided in chapter 6 will be important to this discussion, as will insights from the artefact record (chapter 7).

This approach, which entails a lengthy chapter, has been deliberately adopted with a view to maintaining the historical perspective and attending to the recursive nature of ritual activity already noted (1.2.3). The chapter will be concluded with a synthesis (8.5) of the development of the monumental landscape, in which its structuring and restructuring through time will be considered, and processes of change within the region examined.

The distribution maps referred to throughout this chapter show the same sites as formed the monument groups for the analysis of location factors in chapter 5, and data file numbers are listed in the Notes to Appendix 1.

## 8.2 Neolithic Chambered Cairns

### 8.2.1 Introduction

The majority of the Neolithic cairns entered in the data file are those from the corpus prepared by Henshall (1972) which are located within the area of study. A few additional monuments recorded more recently have been included (fig. 8.1). As was noted above (1.2.4), most belong to the group currently classified as 'Clyde' cairns (Scott 1969a, Henshall 1972). A few cairns may belong to the 'Bargrennan' group (Henshall 1972). There is one passage grave on Arran (Mann 1925) and one monument, Hilton cairn, Bute (BU 43) (Marshall et al. 1976), has been classed as a non-megalithic round cairn (Kinnes 1979).

The early beginning of research into the 'Clyde' cairns has already been discussed (3.4.2, 3.5.2). The excavations of 'Clyde' cairns in the post-war period by Scott, already noted (3.6.2), contributed greatly to the evidence available to him in developing the evolutionary sequence (1969a, 1973a) mentioned above (1.2.4). Reversing Childe's typology (1935, 56-61), in which cairns were seen to degenerate from their elaborate prototypes, Scott detailed a development through time from small single compartments in oval cairns to large multi-compartment chambers in trapezoid cairns with orthostatic facades. The early stages of this development - addition of porch elements or portal stones which led to the building of two-compartment chambers - was seen as a local development, whereas influences from outside the area could be detected in later structural features. It was not suggested that the evolutionary process was invariable, and differences in complexity were recognised. The

resulting typological framework was correlated with changes in the pottery of the region (7.2.2) (the Becharra and Rothesay styles as defined by Scott), to suggest a chronological sequence. This sequence was strengthened by the suggestion that through time settlement was extended from initial coastal foci on to higher ground (Scott 1969a, 190-1, 1970), a view first put forward by Childe (1934) (cf. Kirk 1957). Henshall (1972) would have preferred a less rigid typology, but did not question the basic framework. In later excavations Corcoran was able to distinguish distinct building phases for 'Clyde' cairns at Mid Gleniron (WIG 1,2) (1969). His approach to interpretation of these was towards the confirmation of a unilinear typology (1972).

There is however little evidence independent of the structural changes observed in the cairns to support the evolution through time which Scott proposed. As we have seen (6.3.3, table 6.1) absolute dating evidence for the 'Clyde' cairns is sparse, and does not offer insight into details of structural development. The two radiocarbon dates for Monamore (ARN 9) (AR 58) (MacKie 1964) indicate that the cairn may have been in use for about 1000 years, the earlier date of  $3160 \pm 110$  bc (Q 675) being from an area of burning in undisturbed deposits below the blocking of the forecourt and the later date of  $2240 \pm 110$  bc (Q 676) being for a hearth in the forecourt about the time the tomb was closed. The single determination from Glenvoidean (BUT 1) (BU 2) (Marshall and Taylor 1977) of  $2910 \pm 115$  bc (I 5974), was for samples from below the structure of the northern (axial) chamber. This monument is likely to have had a number of building phases, but in the absence of a sequence of radiocarbon dates the ordering and development of these through time cannot be established (cf. Masters 1981, 172).



The problems of determining a chronological sequence for the earlier Neolithic pottery of the Clyde region have already been discussed (7.2.2). It has frequently been stressed (e.g. Piggott 1973, Masters 1981) that the chambers of cairns whose contents may have been disturbed do not offer secure stratigraphic contexts. In these circumstances, in addition to the circularity which the argument may involve, it seems difficult to justify the verification of an evolutionary typology for chambered cairns through correlation with changes noted in pottery.

The group of chambered cairns currently named 'Bargrennan' has seemed disparate and difficult to fit into surrounding groups. Scott (1969a, 211-4) followed Piggott and Powell (1949) in considering these monuments with their round cairns and passages to be alien from the 'Clyde' group and to be either passage graves or hybrid forms with 'Severn-Cotswold' affinities. Finds from the 'Bargrennan' group are limited and dating evidence is lacking. An element of Henshall's analysis important for the present study is her review of the links between the 'Bargrennan' and 'Clyde' cairns. This arose from her observation (1972, 249-52) that a range of simple rectangular chambers should be recognised for the 'Clyde' cairns, including the open single-compartment chamber which also occurs in the 'Bargrennan' cairns (fig. 8.2). In Scott's analysis this link is obscured by his insistence that the earliest phases of the 'Clyde' cairns were represented by a closed slab-built overground quadrangular structure defined as the 'protomegalith' (1969a, 180-1, 192-8 and fig. 61). They comprised both isolated overground cists such as that found at Cairnmore, Ballochroy, Kintyre (KT 5) (Scott 1969a, 198) and the inner compartments of some chambered cairns such as Haylie (AYR 5) (AY 12) (Scott 1969a, 318). However Scott's hypothesis has not found general acceptance

(Henshall 1972, 68; Masters 1981, 170; Kinnes forthcoming). It is with elaboration of the monuments that differences emerge between the chambered cairns of the 'Clyde' and 'Bargrennan' groups.

Another factor which contributed to separation of the 'Clyde' from the 'Bargrennan' cairns is the contrast in spatial distribution. 'Clyde' cairns, as was noted (1.2.4), occur in a wide area of the western seaboard of south Scotland, whereas the majority of the small number of 'Bargrennan' cairns are located inland in a restricted area of west Wigtownshire and north-west Kirkcudbrightshire. Those within the area of study are peripheral to this distribution, and are separated from the 'Clyde' cairns by the lowland area of central Ayrshire which lacks Neolithic cairns.

### 8.2.2 Location Factors

The results of the analysis of location factors presented in chapter 5 which are relevant to the Neolithic chambered cairns may be summarised as follows.

#### 1. Sites and Altitude, Sites and Distance from the Sea,

##### Accessibility (5.2)

##### Altitude

It was seen that whereas in general the analysis of sites showed the predominance of lowland locations (5.2.2, fig. 5.1), Neolithic cairns also occurred in more upland situations (5.2.3, 5.2.9), notably between 125 and 175 m. above sea level (fig. 5.9).

##### Distance from the Sea

For the area of study as a whole a bias towards coastal locations was



noted (5.2.5, fig. 5.1), with the majority of sites being within a few kilometres of the sea. However in Ayrshire inland activity (fig. 5.3) is reflected in the occurrence of Neolithic cairns at some distance from the coast (fig. 5.9).

### Accessibility

Analysis of accessibility ratings showed that Neolithic cairns occur in locations rated both accessible and inaccessible (table 5.3), with an excess in inaccessible and a shortage in accessible positions compared with the uniform distribution expectation.

## 2. Sites and Solid and Drift Geology (5.3)

### Solid Geology

As was noted (5.3.4) it is in general difficult to establish the extent to which differences in geology were important to site location (5.3.2). Nevertheless some points emerged from the analysis which are pertinent to the location of Neolithic cairns. It was found that these cairns occurred on solid rock such as Dalradian schists, Old Red Sandstone, New Red Sandstone and igneous intrusions with greater frequency than would be expected were sites uniformly distributed (5.3.3, table 5.6), suggesting that this was important in choice of cairn location. This is clearly illustrated on Arran (table 5.10) where Neolithic cairns occur at greater than expected frequencies on the sedimentary rocks such as New Red Sandstone. Their occurrence on minor igneous intrusions was pointed out (5.3.3). This feature does not show in table 5.10 where igneous granite and minor intrusions are not distinguished.

### Drift Geology

From the analysis of the relationship of sites to drift deposits (5.3.2, table 5.5) it was seen that in common with other sites Neolithic



cairns occur with greater frequency than would be expected on raised beach deposits (5.3.4, table 5.6). Table 5.10 shows that the frequency of Neolithic cairns on boulder clay on Arran is less than would be expected were sites uniformly distributed.

### 3. Sites and Soils (5.4)

The difficulties of interpretation of the relationship of sites to present soils have already been stressed (5.4.4). However a significant feature of the analysis here was the very marked frequency of sites in areas of present humus iron podzols over what would be expected were sites uniformly distributed (5.4.2, tables 5.14, 5.15). The association of sites with these soils was seen to apply to the island and peninsula zone of the area of study (5.4.4), and for Neolithic cairns is evident for Arran (5.4.3, table 5.19), but may also be indicated for Kintyre (table 5.17). Areas of present peat in general lack sites (5.4.2, tables 5.14, 5.15). On Arran Neolithic cairns occur more often than would be expected on present peaty podzols.

### 4. Sites and Land Use (5.5)

In general the distribution of Neolithic cairns in relation to present land use shows good agreement with the frequencies expected were the cairns uniformly distributed (5.5.3, table 5.26). This can also be seen to be true for Bute (table 5.31) and to a lesser extent for Kintyre (table 5.28). On Arran Neolithic cairns occur with greater frequency than would be expected on present agricultural land and also in forested areas, but fewer than would be expected are located in areas of rough grazing and moorland (table 5.30). It should be remembered of course that the findings here do not reflect the marked lack of Neolithic cairns in the Ayrshire-Renfrewshire sub-region shown in table 5.1. This point will be

taken up in the discussion below.

## 5. Sites and Aspect, Sites and Prominence (5.6)

### Aspect

The analysis for this feature showed that aspect is likely to have been important in site location, with similar findings throughout the area of study area of study (5.6.5, table 5.36), but some variation for the different kinds of monument. For Neolithic cairns a hillside position was important (table 5.37), with small excesses over expected numbers of cairns on south, south-east and north-east facing slopes as well as the west and south-west facing slopes generally preferred (5.6.3, table 5.37). This shows some agreement with the findings of Perry (1984, 227-8) (Perry and Davidson 1987) for the Neolithic cairns of Arran. Neolithic cairns were found to occur with less frequency than expected on north facing slopes and on areas of flat or undulating ground.

### Prominence

The analysis of prominence ratings suggested that the visual impact of Neolithic cairns within the landscape is likely to have been important in choice of location (5.6.4, table 5.45). No Neolithic cairns occur in locations considered not prominent or conspicuous, where twelve might have been expected, and it seems that there was a preference for positions which were rated prominent in their immediate locality rather than positions rated prominent or commanding overall.

## 8.2.3 The Archaeological Record

The formation of the archaeological record discussed in chapter 3 is relevant to two important points concerning the distribution of Neolithic

chambered cairns (fig. 8.1): the marked absence of chambered cairns in the Ayrshire and Renfrewshire mainland area and the concentration of monuments on Arran, where, as may be seen from table 5.1, almost half of the chambered cairns known for the area of study are located.

The first of these points is of particular importance in view of the cultural evidence described above (6.4.3) which indicates that Neolithic activity was more widespread than the monument evidence suggests. The suggestion put forward above (6.6.3) that at regional level Neolithic activity may have been registered in different ways, hinges on the question whether the absence of chambered cairns in Ayrshire reflects different patterns of Neolithic activity or may result from destruction of the monument evidence. We have noted above (3.7, 6.4.3) that the discovery of small finds in Ayrshire would be in keeping with its concentration of activity and population in recent times (3.2.2, 3.3.2, tables 3.1-3.4). It is important therefore to reiterate the point made (3.7) that it would be unwise to assume that the paucity of chambered cairns should be attributed only to destruction. Although cairn material is likely to be robbed, the robust construction of the megalithic chambers is likely to have a high survival potential. Moreover, the existence of records of the removal of Bronze Age cairns in Ayrshire (3.3.1) suggests that Neolithic chambered cairns, which present much greater difficulties for removal, would also have been noted. As Childe pointed out (1935, 53) 'the chambers in particular are troubleome to remove and have to some degree been protected by superstition'.

Some insight into the survival of chambered cairns within the area of study may be gained from the analysis of the relationship of chambered cairns to present land use summarised above. It was found that



for the area of study as a whole (table 5.26) the occurrence of Neolithic chambered cairns in relation to present land use shows good agreement with what would be expected if chambered cairns were uniformly distributed. They thus occur on agricultural land, in forested areas and in areas of rough grazing and moorland. These findings support the suggestion that, in the parts of the area of study where chambered cairns are known today, they have survived agricultural improvement. The island of Bute is the example which offers the best comparison with Ayrshire. Here as we have seen (3.2.2, 3.3.2) progressive and quite extensive agricultural improvements were carried out. The distribution of chambered cairns in relation to present land use (table 5.31) shows very good agreement with what would be expected were the sites on Bute uniformly distributed.

It seems therefore that the difference in the archaeological record between monuments on Arran, Bute and Kintyre and artefacts in Ayrshire, evident in the contrast between the work in the field and collecting activity of the archaeologists of the late nineteenth and early twentieth centuries (3.4.2, tables 3.1-3.4), may indicate a real distinction between the two parts of the region in terms of prehistoric activity.

Relevant to the second point is Renfrew's suggestion (1973a, 132-3) that the concentration of chambered cairns on Arran represents 'as close an approximation to the original settlement pattern as we are likely to find anywhere' and that 'because the farming there has never been very intensive, most, if not all, of the original tombs have been preserved'. The implication - that survival of chambered cairns has been particularly favoured on Arran in comparison with other parts of the region - is open to question. We have seen (3.3.2, 3.4.1, tables 3.2.3.3) that on Arran, as in the peninsulas of Kintyre and Cowal, agricultural improvement was

particularly restricted, with the transition to sheep farming often more important. Overall the land will never have been as intensively farmed as in the Ayrshire lowlands, but activity has been concentrated in coastal and valley pockets. On Arran, as we have seen (3.3.2) agricultural improvement took place mainly in the southern half of the island, where the majority of the chambered cairns are located. It was also found (3.2.1, 3.3.1, table 3.2) that interest in the monuments on Arran from an early date does not seem to have increased perception of the need for protection and recording. In the peninsulas of Cowal and Kintyre, where improved land is if anything more restricted, it is unlikely that monument destruction through agricultural improvement would have had a greater impact. It is therefore suggested that it may be that Neolithic cairns were in fact more concentrated on Arran than in the surrounding area of the Firth of Clyde, as the present distribution of sites would indicate.

#### 8.2.4 Discussion

##### A. Introduction

Two findings from the study of the background to the Neolithic in chapter 6 are of crucial importance to the interpretation of the appearance of the chambered cairns of the Neolithic in the area of study.

In the first place examination of the historical perspective, the evidence for Mesolithic activity and likely patterns of Mesolithic exploitation (6.2), has shown that there were continuities from Mesolithic to Neolithic, notably activity on Machrie Moor, west Arran, and the exploitation of Arran pitchstone. It was also seen that the



introduction of farming is likely to have come about through existing networks of coastal interaction (6.6.2). The extent to which this may have involved newcomers or the adoption of the techniques and acquisition of the necessary resources by existing communities is unclear, but it seems likely that farming was introduced into a region with existing traditions of land use and resource exploitation, governed by the perceptions and social organisation of hunter-gatherer communities. If this is the case, the traditional model, of chambered cairns appearing as colonist farmers became established in new territory, is no longer appropriate, nor will a relationship between architectural development and extension of settlement necessarily remain valid. Instead it indicates that, in considering the appearance of the monuments, we must, as was suggested above (1.2.4), take into account the period of Mesolithic-Neolithic transition. Some aspects of a period of forager-farmer interaction have already been discussed (6.2.3, 6.6.2), while others will be considered below.

Secondly, from the regional perspective, research, in particular examination of the distribution and frequency of polished stone axeheads (6.4), has suggested that settlement in the Firth of Clyde during the Neolithic is likely to have been more extensive than the monument evidence, taken on its own, would indicate. In particular it seems likely from this evidence that Neolithic activity in Ayrshire may not be fully registered in the palaeobotanical evidence available at the present time (6.3.2, 6.3.3). The implication here is that we should not envisage the direct spatial relationships between the occurrence of Neolithic cairns and settlement concentrations which have been assumed in most previous work. For example it has been proposed that the distribution of the monuments will reflect the area of farming settlement (Childe 1934), or



that it relates to farming territories (Renfrew 1973a, 1976, 1981) (1.2.4). This point, although raised by Kirk (1957) has to date received little attention for the area of study (cf. Kinnes 1981, 87).

### B. Frequency and Distribution

The importance of these findings is confirmed when the frequency and distribution of Neolithic cairns within the area of study are examined (table 5.1, fig. 8.1). If we accept the arguments above concerning the reliability of the archaeological record (8.2.3), several points may be suggested.

It is immediately apparent that it would be difficult to define territories such as Renfrew delineated for Arran (1973a, 1976) (1.2.4) (fig. 1.2) for the wider region of the Firth of Clyde. Moreover the attempt to impose rigid divisions may mask important features such as the occurrence of monuments in pairs, as in the cases of Dunan Beag and Dunan Mor (ARN 7, 8) (AR 62, 63) on Arran, or Lochorodale 1 and 2 (ARG 41, 32) (KT49, 51) in Kintyre. There are also localised clusters of monuments both in Kintyre (ARG 29, 30, 31, 35) (KT 72, 71, 66, 69) and on Bute (BUT 1, 2, 3, 4) (BU 2, 6, 7, 8). Overall a keynote of the distribution of the monuments is the irregularity of their occurrence. Neolithic cairns are altogether lacking in the smaller off-shore islands of the Cumbraes, Inchmarnock and Gigha, sporadic in Ayrshire and in the Cowal peninsula, more evident in Kintyre and on Bute and most obvious on Arran (table 5.1). Even here however the discovery of additional monuments since Renfrew's study make his territories hard to maintain. For the Machrie area the addition of a chambered cairn at Machriewater (AR 11) (Pierpoint et al.

1980) suggests a group of monuments on the moor. In east Arran a tight cluster is known since the discovery of a cairn at Torr an Loissgte (AR 55) (Fairhurst 1981, 21), very near to Giants' Graves North and South (ARN 11, 19) (AR 53, 54).

At regional level the monuments on Arran form a major cluster, with 23 of the total of 47 Neolithic cairns recorded within the area of study being located on the island (fig. 5.1). This suggests that within the Firth of Clyde region Arran is distinctive rather than typical, and should not be considered to represent the norm of monumentality on the Atlantic facade of Europe which Renfrew has suggested.

It is however only when the regional distribution is examined from a historical perspective that a further vital characteristic of the distribution becomes clear. Comparison with the patterns suggested for later Mesolithic activity (6.2) shows that the Neolithic cairns are located not in the area of the Ayrshire coast, focal to Mesolithic activity (fig. 6.1, 6.2.2), but rather in the areas of more marginal Mesolithic exploitation - the islands and peninsulas and inland territories. The cairns thus lie in areas which we have seen (6.2.3, 6.6.2) offered a range of seasonal and lithic sources, some of which are likely to have remained important into the Neolithic. This relationship remains concealed if, as in Renfrew's study or in the more detailed analysis of cairn location on Arran by Perry (1984) (Perry and Davidson (1987), the monument evidence of Arran is treated in isolation in space and in time.

### C. Appearance and Location

We must now focus on the initiation of the chambered cairns, and recall features of the early versions of the Neolithic cairns, which fulfil the requirement of providing a single-compartment chamber, an enclosed burial or mortuary space in which the remains of the dead could remain accessible over a long period (Kinnes 1981). Examples are shown in figure 8.2, where it will be seen that this could be of closed form, as at Ardmarnock (ARG 17) (CO 4), or open with kerbs, as at Glecknabae (BUT 4) (BU 8) and Michael's Grave (BUT 2) (BU 6). Chambers at Cuff Hill (AYR 5) (AY 17) and Balmulloch (AYR 3) (AY 110) (Henshall 1972, fig. 37) make similar provision, but with a passage. An overlap with non-megalithic traditions may be seen at Hilton Cairn (Marshall et al. 1976) (BU 43). Here the chamber, constructed of stone walling against the living rock, had no entrance, but was surrounded by a paved walkway.

At Hilton the small round covering cairn was built of stone and turf. The minimal cairns of the early megalithic chambers are usually entirely of stones. At Mid Gleniron (WIG 1, 2) Corcoran (1969) established from excavation that such cairns were later incorporated into composite monuments. Within the area of study this has been suggested from excavations at Glenvoidean (BUT 1) (BU 2) (Marshall and Taylor 1977), and may be inferred for other cairns such as Gort na h'Ulaidhe (ARG 30) (KT 71) and Baile Meadhonach (ARN 13) (AR 48) (Henshall 1972, fig. 2). Site plans suggest that these small cairns were set grouped together, side by side, end to end, back to back or radially at angles to each other (fig. 8.3).

The locations seem to have been chosen with care. The analysis of location factors summarised above (8.2.2) shows that there was a consistent preference for positions which were rated as prominent in their



immediate locality. This is supported not only from these ratings, but also from the choice of positions on hillsides and the association of cairns with outcrops of bedrock. Such positions have building material to hand, and may provide a stable footing, as is noted by Perry (1984, 231-2) from her analysis of cairn sites. They also offer both separation from the surrounding landscape, making the cairn distinct and visible, and 'prospect' (Appleton 1975) - an open view over the surrounding land or sea. Thus cairns on south Arran may command a view to Ailsa Craig, Becharra (ARG 27) (KT 13) looks across the sea from Kintyre to Gigha and Jura, Glenvoidean (BUT1) (BU 2) offers views over the Kyles of Bute and from Blasthill (ARG 33) (KT 54) a sweep of country can be seen with Ireland in the distance (plates 1, 2, 6).

As such simple monuments were created, re-visited and used, particular areas may have come to be perceived as 'places for monuments'. What seems a preoccupation with building of monuments on Arran, for example, may now be seen as reflecting its long-standing tradition of seasonal and lithic resource exploitation (6.2.2), as well as its dominant and central position within the Firth of Clyde, which made it a reference point for the region and beyond.

The evidence of mortuary practices from the cairns of the area of study is limited, offering only occasional glimpses of the probable diversity of practices through their long history. However it seems likely that, as elsewhere in the Neolithic in Britain, the remains of only certain members of the populace were deposited in the chambers, and that the cairns do not represent tombs for entire communities. This question is discussed by Clarke et al. (1985, 26-28) and by Barrett (1987a). Inhumation burials are known for the 'Clyde' cairns. For example crouched

inhumations were detected from corpse stain evidence at Brackely (ARG 28) (KT 76) (Scott 1969a, 236-7), and there may have been inhumation burials at Dunan Beag (ARN 7) (AR 62) and Glecknabae (BUT 4) BU 8) (Henshall 1972, 81). However much of the evidence is more in keeping with secondary burial (sensu Huntington and Metcalf 1979, 13). For example skeletal material found at Torlin (ARN 15) (AR 43), Clachaig (ARN 16) (AR 41) and Haylie (AYR 1) (AY 12) suggests the selection of skulls and long bones for deposition. At Torlin (Bryce 1902, 83) and Clachaig (Bryce 1904, 88) the bones and grave goods were embedded in a compressed layer of earth with stones. At Clachaig this layer was about four feet deep below the upper edges of the septal slabs and was distinct from the fill of earth and stones above, evidence which suggests deposition over time. Burnt bone, found in quantity at Giants' Graves (ARN 11) (AR 54) (Bryce 1903, 49), may indicate the deposition of cremated remains. If cairns were located in areas visited only from time to time, the spatial separation of rites of incorporation from rites of liminality, as in secondary burial, would not be surprising.

We can envisage that from such beginnings traditional points of contact with the dead may have become established. Through 'use and wont' they may have become the focus of ancestral rites, and powerful points of reference within the landscape.

The results of the analysis of location factors must be considered in the context of these findings. As we have seen the association of Neolithic cairns with present agricultural land has been a dominant theme throughout the history of research. When the Firth of Clyde is studied as a region however we find that cairns are almost entirely absent in the areas of present agricultural land in the Ayrshire-Renfrewshire



sub-region. It has already been noted (5.5.3) that this is particularly striking in view of the fact that 84% of the total present agricultural land in the area of study is located in this sub-region. This finding becomes of critical importance if it is accepted that the evidence of small finds, especially the polished stone axeheads (6.4), is not in keeping with an absence of Neolithic activity in Ayrshire and Renfrewshire, but rather indicates a difference from the larger islands and peninsulas (8.2.3). It may now be suggested that this difference may have arisen from how the region as a whole was perceived. The islands and peninsulas rather than Ayrshire and Renfrewshire were seen as the 'places for monuments'. Moreover with the historical perspective of the Mesolithic we can see how this may have stemmed from the past. Past experience and practice, embedded in current conditions, contributed to the choice of locations for monuments. Past perceptions of the region (6.2.3) may also have played a part. The islands may still have been thought of as far away places, remote and peripheral and visited only at certain times, perhaps by certain people. Other impressions may have been influential. Apart from the magic which islands hold for mankind, Arran could be seen as an island stronghold at the centre of the Firth and as the island with the mountains, whose permanence precluded change and whose height soared above and beyond ordinary life into the realms of legendary gods and heroes of the past.

#### D. The Changing Landscape

In reality however the picture was not static, and it is important to try to enter into something of the interplay of the old with



the new, of continuity and change, which is likely to have characterised the period during which the monuments were built. As has already been noted (8.2.1), it is difficult to be precise about the time at which the chambered cairns appeared. However if the chronological evidence for Arran is in any way typical, monuments are likely to have been being built in the Firth of Clyde region as the impact of the new mode of farming production on man-land relationships and the traditional way of life would be beginning to be perceived. This can be suggested from the earlier of the two radiocarbon dates for the cairn at Monamore (ARN 9) (MacKie, 1964) (AR 58) of  $3160 \pm 110$  bc (Q 675). The early use of this cairn is likely to have been during the period of farming activity on Machrie Moor which commenced ca. 5375 bp (3425 bc) with the episode of cereal cultivation, and continued with a long period of pastoral farming indicated by forest clearance (6.3.2, table 6.1).

### Lowland Cairns

Machrie Moor is one example where we can perhaps glimpse the history behind the association of Neolithic cairns in the island and peninsula zone of the area of study with small areas and pockets of soils developed on raised beach and valley deposits - the areas of land used for farming today - which was clearly demonstrated in the analysis of location factors (8.2.2). This need not imply a link with 'critical resources' (sensu Chapman 1981) - restricted farmland - for with hindsight we can see that while the Neolithic cairns on Machrie Moor are likely to have existed within a developing field system and in a settled landscape, at the same time they were located in an area which for generations had been perceived as a place that was visited from time to time in the course of hunter-gatherer activity (6.2). Other examples may be cited where the

locations chosen for cairns had seen earlier activity. The possibility that there was Mesolithic activity at the shell mound which underlies the cairn at Glecknabae (BUT 4) (BU 8) has recently been strengthened by the finding of the flint core described above (6.2.2) (Cormack 1985). Hilton Cairn (BU 43) seems to have been built over a settlement site (Marshall et al. 1976) and Tormore II (ARN 5) (AR 16) over a flint scatter (McArthur 1861). Such sequences suggest that the cairns were positioned in a landscape already structured by earlier use. The continuation of a Mesolithic economy alongside the introduction of farming is suggested from the detailed study of the immediate environment of the cairns of Slidderly Water and East Bennan (ARN 17, 14) (AR 40, 44) (Davidson 1983, Perry 1983). Both cairns were found to be located in areas where limited farming land could be supplemented by hunting, fishing and gathering (6.6.2).

#### Upland Cairns

The analysis of location factors has confirmed that Neolithic cairns were located not only in lowland, coastal areas, but also in less accessible uplands and inland. Often these cairns lie in areas of present peaty podzols used today as forestry plantations, moorland or rough grazing. An example already noted (6.5.2) is the location of the cairns of Lochorodale 1 and 2 (ARG 41, 32) (KT 49, 51) in an area of south Kintyre which would have been suited to hunting or pastoral farming (plate 5). Here too we must think in terms of a changing landscape, not only the shifting pattern of clearance and regeneration of the forest in connection with the pastoral activity suggested from palaeobotanical evidence (6.3.2), but also the transformation of traditional hunting territories for use as grazing land.

The Neolithic cairns of Carn Ban and Ballymeanoch (ARN 10, 13) (AR



47, 48) are further examples. These cairns are located in high valley positions in south Arran in an area which would also have been suited to hunting or pastoral activity. Here we have some indications of Mesolithic activity from the site of Auchareoch mentioned above (6.2.2) (plates 13, 14). The site lies on a kame terrace, one of a number in an area now thickly forested. It has remained accessible because of its location beside a forest track, and was discovered through quarrying of sand and gravel. The lithics collected and the finding of hearths during preliminary investigations (Affleck et al. 1985) suggest Mesolithic occupation, perhaps as a hunting camp, and the abundance of hazelnut shells suggested gathering activity and possible autumn use. Worked pitchstone was present. A volcanic dyke with pitchstone inclusions is known in the vicinity, now located in a dense area of forest. The site is likely to have seen Neolithic activity also, for flints of Neolithic appearance were among material in earlier collections made from the eroding surface of an area from which the peat and topsoil had been stripped in connection with quarrying.

The cairns of the 'Bargrennan' group in Ayrshire are, as we have seen, removed from the widespread agricultural land of the Ayrshire lowlands, sometimes in locations which suggest the use of valley routes (cf. Scott 1951). Examples are Cuff Hill and Loanfoot (AYR 5, 6) (AY 17, 62). In the hills of south Ayrshire cairns, located in areas which remain sparsely settled to the present day, may reflect continuing movement on hills which showed evidence of Mesolithic activity (6.2.2). The evidence from pollen analyses, for example the findings at Snibe Bog (Birks 1972), was, as we have seen (6.3.2) compatible with the development of upland pasture in this area in the Neolithic. If, as was suggested, elm



for fodder was more readily available than in lowland areas, movement into the hills may have continued as part of an agricultural cycle (6.5.3). Other resources may have been collected in the course of such routine activities. For example, chert, which like flint is not readily available in south-west Scotland, occurs in the valleys of the Ken and Deugh in Kirkcudbrightshire (Wickham-Jones and Collins 1978).

As farming was introduced, and became established, we must therefore envisage that the landscape gradually became more structured. As small fields for cultivation were laid out and areas of grazing land were defined, boundaries were set on the 'wilderness' areas. In human terms this is likely to have entailed changes in social organisation, and it is to these that we must turn before considering the elaboration and modification of the monuments.

#### E. Social Change

A useful example which may be considered here is the exploitation of lithic sources, whose value to communities has been stressed by Gould (1971, 160-3). Here we know that exploitation of Arran pitchstone continued and indeed is likely to have increased in the Neolithic (6.6.2). Other lithic sources on Arran may also have been important in view of the range of rock available (2.3.3), and it was suggested above (cf. Care 1979, 1982) that the large number of Neolithic cairns on Arran may be related to its unique range of traditional resources, as well as to its central position for exchange. In the Mesolithic these resources are likely to have been within the regular 'home range' of some hunter-gatherer groups and within the wider territory covered more

occasionally by others. Among the core features of foraging societies suggested by Leacock and Lee (1982, 8-9) are collective ownership of the land and its resources, and the right of reciprocal access to the resources of other groups through marriage ties, visiting and co-production. Jacobi (1978) has suggested that something of the periodic aggregation and territorial flexibility of Mesolithic groups, described by Fleming (1982), may account for recurring patterns in the distribution of microlithic flints in the Pennines and North Yorkshire. The presence of settled farming communities on Arran is likely to have conflicted with this right of access of all people to all land, perhaps raising for the first time questions of access to resources such as pitchstone or other lithics (Ericson 1984), and requiring changes in the social arrangements for resource exploitation. More complex networks of exchange at a smaller scale may have developed, such as were illustrated from a study of early farming communities in Sweden (Welinder and Griffen 1984), and inequalities of access and control of supplies may have developed, contributing to the power of some groups. The reorganisation of rights of access and resolution of difficulties and conflicts is likely to have required a level of decision-making and negotiation foreign to hunter-gatherer societies (Leacock and Lee 1982, 10-13), offering opportunities for groups or individuals to move into positions of political power.

This is only one illustration of ways in which inter-dependence is likely to have increased among what probably remained loosely integrated societies. Decisions will have had to be made concerning the use to which the land was put. Once this was agreed some tasks such as the clearance of forest or the building of boundaries and fences may have been

shared, again requiring negotiation and organisation. Other changes may have offered opportunities for leadership within communities. For example, the division of labour between the care and management of flocks and herds and the cultivation of arable plots. Participation in marriage alliances and wider networks of exchange is likely to have increased in importance as investment in labour increased, and, with mobility lessened, there may have been more delegation of negotiation. Through time it may no longer have been the case that everyone could draw directly upon the authority of the ancestors, and some separation of elite groups or individuals from the rest of the community may have begun.

It may be therefore that within a changing landscape the Neolithic cairns, through reference to the past and past traditions, emphasised stability despite change (cf. Cherry 1978). At the same time, as the location of the ancestors they may have become the source of power through which the authority of leaders among the living could come to be accepted.

#### F. Cairn Morphology and Elaboration

A full revision of the Neolithic cairns of the area of study is outwith the scope of this thesis. The intention is therefore to concentrate on key features of their architectural development. These are illustrated in figs. 8.2, 8.3 and 8.4.

##### Chambers

Elaboration of the chambers of 'Clyde' cairns follows the mode of linear accretion, typical of north Britain (Kinnes 1976). The method of construction however, with imbrication of the side slabs (Scott 1969a,



182) is a defining feature of the 'Clyde' cairns (fig. 8.2), which seems likely to have been developed within the region. Two-compartment chambers are the most common, and may have been developed from single-compartment structures, as at Brackley (ARG 28) (KT 76), or built as a single unit, as seems likely for the main chamber at Gort na h'Ulaidhe (ARG 30) (KT 71). Chambers with more than two compartments have a reduced distribution, and within the area of study extension of the chamber is very evident on Arran in the occurrence of four-compartment chambers, and even five compartments are known. The provision of separate depositional contexts which these developments suggest has been interpreted as indicative of fission and fusion within society (Fleming 1972), such as might be expected from the social changes likely to have been taking place in the period during which the cairns are likely to have been built.

### Access

Access to the early versions of the 'Clyde' chambers was direct from the edge of the cairn. Elaboration of the entrance by the addition of portal stones, of varying height and width, created more imposing entrances (fig. 8.4 a). These, described by Scott (1969a, 184-9), included 'complex' entrances with double portal stones as at Monamore (ARN 9) (AR 58) or Bicker's Houses (BUT 5) (BU 17). An extreme development seems to the 'adit' at Brackley (ARG 28) (KT 76), and another constricted entrance at Beacharra (ARG 27) (KT 13) may be unique. Fleming has suggested (1972) that these arrangements may have resulted from problems in integrating chamber and facade (Henshall 1972, fig. 3), as seems likely at Monamore (ARN 9) (AR 58). However they also make entry difficult, and indeed at East Bennan and Glenrickard (ARN 14, 6) (AR 44, 66) the entrances seem to have become non-functional through the close setting of the portal stones.

This suggests that there was no longer the free access to the chamber that was a feature of the early cairns. Indeed these arrangements seem designed to focus attention on the inaccessibility of the inner recesses of the chamber and their separation from the area outside the portals, suggesting restriction of the access to ancestral remains and the authority they represented. Features of the chamber architecture also suggest limitations on access. The septal slabs, as well as having a structural function in supporting the side walls, are likely to have marked or closed chamber divisions. However, like kerb stones, they present barriers to passage through the cairn, so that it would have been difficult to work within the confined, dark chamber space, whether in connection with burial rites or in final filling and blocking. These considerations support the suggestion that the capstones were raised to allow access or that the roof gap was left open, perhaps with a temporary cover, as MacKie (1964, 22) has suggested from evidence at Monamore (ARN 9) (AR 58). Here the cairn may never have risen above the sides of the chamber while it was in use, so that capstones would have remained accessible or need not have been placed in position until the final blocking took place.

#### Cairns and Facades

For the 'Clyde' cairns a long cairn often of trapezoidal plan is the usual final form (fig. 8.3), although less regular rectangular and oval shapes occur, and there are round cairns as at Dunan Mor (ARN 8) (AR 63), a site with similarities to 'Bargrennan' cairns, and Glenreasdale (ARG 26) (KT 86). The very elongated cairns at Lenihuline Wood (BUT 3) (BU 7) and Gort na h'Ulaidhe (ARG 30) (KT 71) are likely to cover a spread of monuments of earlier date. With most cairns severely robbed and little



excavation evidence, the internal structure of the cairns is not well known. It seems likely that the cairn material will have accrued through a long period from field clearance (cf. Fleming 1973). The finished cairn, usually contained by a kerb of upright stones, inclined slabs or dry walling, defined the area of the monument and unified any separate elements together, sometimes cutting off access to some of the chambers. Fleming (1973, 187) found that a long cairn is likely to have 'ensured an impressive profile', using the height of the cairn to 'best advantage. The lengthening of the cairn is thus likely to have enhanced the impact and visibility of monuments which, as we have seen (8.2.3), were often placed in conspicuous and prominent positions in the landscape. This will have increased their effectiveness as reference points and signals of authority and power. A long cairn might suggest that its orientation was also important. Henshall (1972, 98-100) noted a preference in the wider 'Clyde' cairn province for orientations of cairn and axial chamber between north and south-east, with a north-east orientation favoured. This did not however hold for Kintyre (Scott 1969b, 233, fig. 78) or for Arran, where cairns with orientations to south and west are also found. For Arran, Burl (1981, 256, figs. 7.1-7.3) found that the azimuths are 'unusually dispersed', and he suggested that the cairns may have been designed not only with reference to solar and lunar points, as might be the case for Carn Ban and Monamore (ARN 10, 9) (AR 47, 58), but may have faced towards natural landmarks or other monuments. Traditional features may have been important, or the orientation could preserve an axis created when the monument was first established.

The widening of the cairn towards the axial chamber is closely linked with the definition of a distinct focal area outwith the chamber by the



addition of a facade (fig. 8.4 a,b). In some cases cairn and facade seem to be of unitary design. Examples are Beacharra and Blasthill (ARG 27, 33) (KT 13, 54) and East Bennan (ARN 14) (AR 44) (Henshall 1972, 61), and it may be more valid, as Fleming has suggested (1972), to see the trapezoid cairn in this context than to evoke tenuous links with European long-houses (e.g. Hodder 1984). Facades, built of orthostats, sometimes with panels of dry walling, or constructed only of dry walling, reach out from the portals and define an area in front of the cairn (fig. 8.4 b). A shallow forecourt bounded by a slightly crescentic facade occurs most frequently, and in the area of study the semi-circular forecourt enclosed within a deep concave facade occurs only on Arran. It is best seen at Carn Ban and East Bennan (ARN 10, 14) (AR 47, 44), but ruined remains suggest that similar facades existed at Tormore I, Dunan Beag and Giants' Graves (ARN 4, 7, 11) (AR 28, 62, 54) (Henshall 1972, 39).

Cairns emphasise the monumental aspect. Forecourts, by creating a stage-like setting (Fleming 1973) in which the facade, fronting the chamber and its contents, forms a background, switch the attention of onlookers away from the ancestral remains to the importance of those who take the lead in ceremonies and ritual. It may be that the forecourts are a tangible indication of the recognition that elites among the living could act as intermediaries between the people and the ancestors. However, little evidence is available of forecourt activities, for only a few forecourts within the study area have been examined. At Glenvoidean (BUT 1) (BU 2) areas of burning suggested successive fires (Marshall and Taylor 1977). At Monamore (ARN 9) (AR 58) there was also evidence of fires and pottery sherds and fragments of pitchstone and quartz may have been scattered on the ground (MacKie 1964). At Beacharra (ARG 27) (KT 13)

patches of charcoal and pottery sherds were found (Scott 1969a, 240).

#### G. Comment

Study of the Neolithic cairns of the Firth of Clyde highlights the individuality of the monuments which was apparent from the analyses of Scott and Henshall. This may be illustrated from the differences in tradition between the 'Clyde' and the 'Bargrennan' cairns. In the 'Bargrennan' group single-compartment chambers were maintained, sometimes approached by a passage. Several may be dispersed under the round cairn. Although cairns were enlarged, other monumental features such as facades and forecourts were little developed. The cairns assigned to both groups however show much variation, and it might be more realistic not to attempt to place every cairn in a typological category and sequence, but rather to view each monument as particular, created in relation to its historical and regional context as well as more local factors. The variable spectrum of aggrandisement of the monuments of the region, in which some were elaborated and others not, may then fall into place. This need not conflict with the development of features distinctive to the region, and the measure of regional coherency which is apparent in the architecture of the cairns. The distinctive development of elaborate cairns on Arran, indicated in several of the architectural features discussed above, may however then be seen to be in keeping with the clustering of cairns on Arran and the possible emulation that a 'place for monuments' may have engendered. The occurrence of distinctive, complex artefacts in the Neolithic cairns on Arran, discussed above (7.2.3), may in turn be related to this frequency and complexity of the

monuments, as well as to Arran's position as a centre for interaction in the Firth of Clyde.

Along with distinctive development within the region a unitary aspect must still be recognised with the wider megalithic world beyond. The sharing of some features with other regions, always attested, has sometimes been sufficiently explicit to suggest specific connections such as those outlined by Scott with the Severn-Cotswold area or with Ireland (1969a, 206-12). This aspect of the cairns may perhaps have arisen from 'converging evolution' (Bradley and Chapman 1984a,b), something of the process of peer polity interaction described above (1.2.6). Arran, emerging as a seat of power within the Firth of Clyde and the focus of interaction with the outside world, would be in a position to participate in restricted spheres of exchange. Through these contacts ideas may have been shared, beliefs formed and supported, and expertise in design and engineering tapped.

#### H. The Blocking of the Cairns

The final modification of the Neolithic cairns was the filling and blocking of the chambers and forecourts. It seems likely that this will have been carried out at most sites. Bryce's findings suggest that chambers were deliberately filled, with his clearest evidence being from Carn Ban (ARN 10) (AR 47) (Bryce 1903, 41). The details are best known from the excavations at Glenvoidean (BUT 1) (BU 2) (Marshall and Taylor 1977), where it was found that the material used in the various chambers differed. Evidence of forecourt and entrance blocking from a number of excavations including Monamore (ARN 9) (AR 58) (MacKie 1964),



Beacharra (ARG 27) (KT 13) (Scott 1969a, 240), Glenvoidean and Ardnacross 2 (ARG 35) (KT 69) (RCAHMS 1971, 31, Scott 1972) details the piling of massive boulders against the entrances after they had been blocked with upright stones or walling. At Monamore the slabs against the entrance and facade were covered with a thick packing of earth and stones, and the blocking deposits enclosed by a kerb.

Two aspects of the blocking and filling of the cairns suggest that an increase may have taken place in the power of leading or dominant groups (cf. Adams 1977). The magnitude of the task and its iconoclastic nature suggest the exercise of control over manpower and resources, while the deposition of specialised artefacts in the chambers and their inclusion in filling and blocking deposits (7.2.3) indicates that key people in the region were in a position to penetrate the restricted networks of exchange. This may represent the continuation and culmination of the gradual social change which was discussed above. On Machrie Moor Robinson (1981) envisaged a period of 400-500 years of stable farming following the elm decline (6.3.2, table 6.1). During this time cereal cultivation remained small-scale, but there was ongoing clearance of the forest for pastoral farming. There may as Robinson suggests have been a rise in population. We can envisage an increase in the importance of agricultural land and stock as well as in traditional lithic and other resources, so that there may have been a widening of inequalities among groups enabling some groups or individuals to become dominant over others. As commitment to farming as a way of life became more fixed and options narrowed, interdependence is likely to have continued to increase. Delegation of decision-making and negotiation may have been to a smaller number of people, with opportunities of increasing political power as

groups merged into larger units. Some leading groups may thus have moved into positions of higher authority than others, a process eventually encouraging the emergence of direction at regional level.

The artefacts point to a beginning of the filling and blocking process in the later Neolithic. It may have extended over some time, judging from the incorporation of Food Vessel burials into chamber compartments at Ardnacross 2 (ARG 35) (AR 69) (Scott 1972) and Brackley (ARG 28) (KT 76). At Brackley Scott (1969b, 237) found that this burial was followed by the filling of the chamber and blocking of the entrance, the same material being used throughout. With this final sealing of the monuments the remains of the ancestors were made inaccessible, and additional burials could no longer be made. Here we can detect the rejection of the old ancestor-focussed world view and the use of ancestor rituals as a source of authority. As we will see below (8.3, 8.4) this marks the point of transition to a new scale of provision for ritual and ceremony, and a new and separate tradition of funerary rituals which through time came to dominate the archaeological record. However the Neolithic cairns, prominent and visible, remained symbols of past practice, and in the sections which follow we will also notice ways in which they continued to be perceived as important points of reference in the landscape.

## 8.3 Stone Circles, Standing Stones and Cup-Marked Rocks

### 8.3.1 Introduction

This section is concerned with ritual and ceremonial monuments, whereas the burial monuments will be the subject of section 8.4. Stone circles and standing stones share in general a free-standing form of megalithic construction. Cup-marked rocks occur in association with such megaliths, as well as in other contexts. The chronology of all these monument groups has, as we will see, many uncertainties. They are likely to represent long-lasting traditions, but ones which spanned the later Neolithic and early Bronze Age. Where appropriate aspects of all three monument groups will be discussed together: results of the relevant analysis of location factors (8.3.2) and relevant points concerning the formation of the archaeological record (8.3.3), both of which offer points of comparison. In section 8.3.4 there will be separate discussion of the evidence concerning each of these three groups of monuments and their distribution within the area of study, as well as consideration of their likely function and place in the record of the monuments.

### I Stone Circles

The range and variety of monuments classed as stone circles is described by Burgess (1980, 339-42 and fig. 7.16). The different forms are likely to have fulfilled a range of functions from the second half of the third millennium bc until near the end of the second millennium bc, by which time a tradition which may have arisen with the building of henges



had become associated with ring cairns and related monuments. Burl's study (1976) of the stone circles of the British Isles brings out regional differences. Among these the association of stone circles with burial, typical of north-west Britain, is seen to be significant (Burl 1976, 39).

Burl also stresses the importance of local custom to architecture. Diversity of form is particularly marked in the clusters of circles and individual examples which make up his regional group in the western isles of Scotland (1976, 140-55). Even among the stone circles of the smaller region of the Firth of Clyde (fig. 8.5) the range of monuments is striking, as is illustrated in the compact cluster of circles on Machrie Moor, Arran. The early survey and excavations of this group by Bryce (1862) have already been described (3.4.2). More recently accurate survey of the three best preserved circles (Bryce's numbers 5, 3 and 1) (AR 17, 19, 21) (Roy et al. 1963) has detailed the range in size and variety of shapes (fig. 8.6). The form and structure of the circles which occur elsewhere in the area of study are less well known, although the circle at Ettrick Bay, Bute (BU 12) was probably an ellipse and that at Blackshaw Moor, Ayrshire (AY 35) may have consisted of concentric rings (Burl 1976, 356, 355).

Burl (1976, 45-6, fig. 6) placed the Machrie Moor circles, in two of which Food Vessel pottery of around 1600 bc (7.6.2) was found, in the period 1800-1400 bc. However he stressed that the monuments might date from earlier than the Food Vessel burials (1976, 47, 147). Since his study was completed it has emerged that two of the Machrie Moor circles may have had pre-stone phases. This discovery came through work initiated by Burl (1980b) at Bryce's circle 1 (AR 21) and the previously unknown circle 11 (AR 22), described above (3.6.2). Investigations have been

continued by Haggarty (1985, 1986). As is described in her interim reports, a probable sequence has been established, although at the time of writing radiocarbon determinations are still awaited (Haggarty pers. comm.), and the full excavation report is still in preparation. An early phase is likely to be represented by pits which contained pottery and carbonised hazelnuts. At a later stage concentric timber rings were erected on both sites. At circle 1 Grooved Ware was associated with some of the postholes. A period followed in which stake fences were erected and there was evidence of ard ploughing. This phase pre-dated the erection of the stones. The area was used again as farm land after the circles had fallen into disuse. If this evidence is typical, it may be that the Food Vessel burials are but one aspect of a long and complex history of circular monuments on Machrie Moor.

A number of circles in the area of study are likely to be of the kerb or ring cairn tradition. Examples are the elliptical setting of graded stones with supine slab at Auchagallon to the north of Machrie Moor (AR 6) (Bryce 1910, 119-20) or the granite blocks which seem to have formed a close-set ring at Moss Farm Road (Machrie Moor 10) (AR 12) (Bryce 1910, 151, Burl 1980b). Many of these monuments are much destroyed. Excavation of embanked stone circles at Rig Hill, New Cumnock and Beoch, Dalmellington, Ayrshire (AY 99, 100), (McLeod, 1938) suggests the complexity of structure and burials of such monuments, which will be discussed further below (8.4). Other circles less typical of the western isles region are the small 6-7 stone ring of rough graded stones beside the Brodick-Lamlash road (AR 65), or the small four-poster settings, of which three are known in Arran. At the four-poster at Dunlop, Ayrshire, (AY 20) cremated bone was found on excavation (Love,



1876), but investigations at Aucheleffan in south Arran (AR 46 ) Bryce 1903, 66) proved unrewarding.

A major focus of recent research on stone circles has been in response to the work of Thom (1967, 1971). After many years of detailed survey and planning at sites throughout the British Isles, he concluded that stone circles were set out to accurate geometric designs and that a standard unit of measurement (the 'megalithic yard') was almost universally used. This theory has received a mixed reception. His further conclusions that stone circles and standing stones could be extremely accurate astronomical observatories have stimulated renewed and intensive interest in archaeoastronomy. The ongoing debate among archaeologists and experts from other disciplines about ceremonial astronomy associated with ritual and the precise scientific astronomy proposed by Thom is well known from numerous papers and texts (e.g. Burl 1980a, Fleming 1975, MacKie 1977, Ellegård 1981, Ruggles and Whittle 1981, Heggie 1982, Thorpe I J 1983).

## II Standing Stones

The majority of the standing stones within the area of study (fig. 8.7) are isolated monoliths, although some could be remnants of more complex settings, for pairs, rows and groups of stones also occur, such as the sinuous line of stones at Escart (KT 1) and the row at Ballochroy (KT 5), both in Kintyre. Stones also occur in association with other monuments, and, as has been noted, some are cup-marked (plates 2, 3, 4, 16, 17, 18).

The chronology and affinities of standing stones are difficult to



determine. Most of the standing stones recorded in the data file are likely to have been erected in antiquity, but it should be remembered that stones are known to have been set up in more recent times. Where stones are clearly associated with other monuments - chambered cairns, stone circles or Bronze Age burial sites - erection in the Neolithic or early Bronze Age seems indicated, but the range of monuments suggests that stones may have been erected over a long period. Moreover, contemporaneity with another monument cannot be assumed, for there is always the possibility of separate motivation. Such stones have therefore been treated as separate entities in the analysis (cf. Ruggles 1984, 44-5). Within the area of study instances are known of removal of standing stones, but records of investigations are limited. Excavation at the base of the standing stone beside Dunan Beag chambered cairn (ARN 7) (AR 62) did not produce datable artefacts (Bryce 1910, 79). Chronological evidence from outwith the study area supports a long tradition. A date of  $2860 \pm 270$  bc (GX-2781) was obtained for charcoal from a firespot in the vicinity of Duntreath standing stones, Stirlingshire (MacKie 1974, 186-7). However, as MacKie points out, the nature of any association remains uncertain. At Pitnacree, Perthshire a radiocarbon date of  $2270 \pm 90$  bc (GaK-602) was obtained for material more securely associated with the standing stone on top of the burial mound (Coles and Simpson 1965, 38). In southern Ireland a radiocarbon date of  $1315 \pm 55$  bc (GrN-9281), obtained for an alignment at Maughanskilly, Co, Kerry, was thought to relate to the construction (Lynch 1981, 73).

Although lists of standing stones have been prepared at different times for specific parts of the area of study (chapter 3), a regional approach to the location and distribution of standing stones as undertaken

here has not previously been attempted.

### III Cup-Marked Rocks

One of the earliest drawings on record of cup-marking comes from the area of study. A cist cover found at Coilsfield, Tarbolton, Ayrshire is known only from a drawing made in 1785 by Colonel Montgomery, reproduced in the account of Scottish rock art by Simpson (1865, plate XIII). Carrying spiral, cup and concentric markings, it illustrates the limited range of motifs used and the apparent simplicity of cup-and-ring art (Haddingham 1971, 136-51; Burgess 1980, 347-8). The content remains consistent throughout northern Britain, and the same elements are found in passage grave contexts in Ireland. Close parallels for the cup-and-ring marked rocks found in western Scotland have long been recognised in Galicia. Such a commonality of theme, with variation being in the detail of individual compositions, has prompted much ingenuity in the search for meaning (Morris 1967, 96-7). The precise significance of the carvings however remains elusive. Lay-out and design have been studied by Thom (1969). His conclusion that the accuracy was consistent with the use of a 'megalithic inch' and geometrical skills comparable to those used in the building of stone circles remains open to question (Haddingham 1971, 148).

Much uncertainty remains concerning chronology. The cup-marked covers and slabs belonging to cists containing Beaker or Food Vessel pottery, as at Coilsfield, may be of early Bronze Age date. Other examples are known from Ayrshire. Burgess has however pointed out (1980, 347-8) that this may represent a secondary use of pieces taken from outcrops carved at an



earlier time. The relationship of the material dated to 1670<sub>+50</sub> bc (GaK 800) at a burial cairn at Chatton Sandyford, Northumberland (Jobey 1968, 26) to the cup-marked stone which was found is uncertain. Burgess has pointed out that at Fowberry Moor, Northumberland a burial mound was built over a cup-marked outcrop (1980, 347). The tradition of simple cup-marks is likely to have been of long duration, the earliest known being from Neolithic contexts, as at Dalladies long barrow (Piggott 1972, 30). A septal slab at Ardmarnock chambered cairn (ARG 17) (CO 4), carried both a cup- and cup-and-ring marking (Henshall 1972, 98), and since the data file was completed a cup- mark has been discovered on the inside face of a side slab at Lenihuline cairn (BUT 3) (BU 7) (Marshall 1985).

The majority of the carvings within the area of study (fig. 8.8) are cup-marks, but cup-and-ring markings are also known (fig. 8.9). Most are on natural rocks or boulders or on natural outcrops. The large number of examples in Kintyre has been known since an inventory was made by Mrs Macalister Hall (3.5.2). They include particularly fine examples, such as the carvings at Braids and Low Clachaig (KT 11, 19) (plate 19) (RCAHMS 1971, 52-61). Outstanding examples of carved outcrops are at Stronach Wood, Arran (AR 74) (Somerville 1901) and Blackshaw Hill, Ayrshire (AY 34) (Smith and Boyd 1889). Several standing stones within the area of study are known to be cup-marked. The surveys and studies carried out by Morris and Bailey (1966) and by Morris (1967, 1968, 1969) have made the major contribution to the present record of cup markings in the area of study. Excavation is rare, but two recent investigations in the area of study may be noted. Excavation of the area surrounding a cup-marked outcrop at Auchalick Wood (CO 3) in 1987 produced no finds (Curtis pers. comm.).



Investigations, also in 1987, at Catrine, Ayrshire of another cup-marked outcrop discovered since the data file was completed were equally unrewarding (Fojut pers. comm.).

### 8.3.2 Location Factors

The results of the analysis of location factors presented in chapter 5 which are relevant to stone circles, standing stones and cup-marked rocks may be summarised as follows.

#### 1. Sites and Altitude, Sites and Distance from the Sea,

##### Accessibility (5.2)

##### Altitude

While both stone circles and standing stones were found to keep within the general trend to locations at low elevations (5.2.2, fig. 5.1), it was noted that for stone circles the histogram shows a peak in distribution between 25 m. and 50 m. above sea level (5.2.3, fig. 5.10), rather than below 25 m. as is the case for all sites. Cup-marked rocks were found to occur at somewhat higher elevations than the other monument groups. This was noted for Kintyre (5.2.3, fig. 5.14).

##### Distance from the Sea

All three monument groups reflect the bias towards coastal locations noted (5.2.5, 5.2.6, fig. 5.1), with only occasional instances of sites in inland situations (figs. 5.10, 5.11, 5.14).

##### Accessibility

Stone circles were found to occur in locations rated accessible and inaccessible in the expected numbers. Standing stones occur somewhat more frequently than expected for a uniform distribution in accessible

locations. Cup-marked rocks were found to occur more frequently in positions rated as inaccessible than would be expected were the sites uniformly distributed (5.2.8, table 5.3).

## 2. Sites and Solid and Drift Geology (5.3)

### Solid Geology

Stone circles occur with greater frequency than would be expected from a uniform distribution on New Red Sandstone - all on Arran (table 5.10) - and on igneous rocks, and standing stones on New Red Sandstone and rocks of the Dalradian series (5.3.3, table 5.6). For cup-marked rocks the association with the schists and phyllites of the Dalradian series was found to be the dominant feature emerging from the analysis of sites and geology (5.3.3, table 5.6). This feature arises primarily from the large number of cup-marked rocks associated with the Dalradian schists in Kintyre (table 5.8).

### Drift Geology

In common with other monuments, stone circles and standing stones were found to occur with greater frequency than would be expected on raised beach deposits (5.3.4, table 5.6), and fewer than would be expected on boulder clay and peat.

## 3. Sites and Soils (5.4)

As with Neolithic cairns the frequency of stone circles and standing stones in areas of present humus-iron podzols was found to be markedly greater than would be expected were the sites uniformly distributed (5.4.2, tables 5.15). This was seen to apply to the island and peninsula zone of the area of study (5.4.4), for example on Arran (5.4.3, table 5.19). In Kintyre (table 5.17) standing stones also occur with greater frequency than would be expected on present non-calcareous gley soils.

Like Neolithic cairns, stone circles and standing stones are also known on present peaty podzols, again on Arran (table 5.19). Cup-marked rocks are associated with present non-calcareous gley and peaty gley soils rather than with brown forest (5.4.3, table 5.15), and in Kintyre (table 5.17) their greater frequency, over the uniform expectation, on calcareous gley soils was noticeable. The frequency of stone circles, standing stones and cup-marked rocks in areas of present peat are much smaller than would be expected from a uniform distribution.

#### 4. Sites and Land Use (5.5)

Stone circles, like Neolithic cairns, occur in relation to the different categories of present land use at frequencies close to that expected were the sites uniformly distributed (5.5.3, table 5.26). Standing stones however occur with greater frequency than would be expected on present agricultural land. This is especially noticeable in Kintyre and Arran (tables 5.28, 5.30). In Arran there are fewer standing stones than would be expected in present rough grazing land, while in Kintyre fewer than expected occur both in rough grazing and in areas of present forest (table 5.28). In Ayrshire standing stones occur more often than would be expected in areas presently built up (5.27). The numbers of cup-marked rocks are near the expected values in relation to the different categories of present land use when the area of study is considered as a whole (5.3.3, table 5.26), although with greater frequency than expected in areas of present rough grazing and moorland. In Kintyre however (table 5.28) more cup-marked rocks are found on present agricultural land than would be expected were the sites uniformly distributed, and fewer in areas of present forest.

#### 5. Sites and Aspect, Sites and Prominence (5.6)



### Aspect

For stone circles, unlike other monument groups, the findings for the area of study as a whole showed sites occurring in relation to aspect at around the expected frequencies (5.6.3, table 5.37). On Arran more than would be expected are located on flat or undulating areas of land (table 5.41). For standing stones, the findings suggested that stones were erected more often than would be expected on the south-west facing slopes generally favoured (5.6.3, table 5,37) as well as on hill-top and crest of ridge positions at the expense of fewer on the flat ground. More cup-marked rocks were found to be located on the west or south-west facing slopes which seem to have been generally favoured than would be expected from a uniform distribution. South-east facing slopes were also favoured (5.6.3, table 5.37).

### Prominence

Stone circles were found to occupy positions rated as prominent or commanding more often than would be expected if the visual impact of the sites was unimportant, and standing stones were found to be located in positions considered not prominent or conspicuous less often than would be expected. Cup-marked rocks on the other hand were found to be located in positions rated not prominent or conspicuous more often than would be expected (5.6.4, 5.6.5, table 5.45).

## 8.3.3 The Archaeological Record

### Free-Standing Megalithic Monuments

It has been suggested (Roy et al. 1963) that the circles on Machrie Moor form the only well preserved group in this part of Scotland.

Haggarty (1985) attributed the survival of monuments on Machrie Moor to their remote location and the prevalence of blanket peat which has meant less intensive use of the land for agriculture in recent times. At the same time there is the suggestion (Burl 1976, 144; Barnatt and Pierpoint 1983) that the monuments are likely to have been focal both to Arran and the surrounding region. The question whether the circles on Machrie Moor represent an unusual cluster, atypical of the rest of the area of study therefore requires examination.

One important factor relevant to this problem emerged from the study of the earliest beginnings of the archaeological record in the period before 1780 (3.2.1). A significant point noted was the attention drawn to the erected stones and circles on Arran by seventeenth and eighteenth century writers. Moreover their reports suggest that they considered the Machrie Moor monuments to be striking and unusual, not monuments regularly encountered. It would therefore appear that they seemed unique at a time when, as we have seen (3.2.2), agricultural improvement had hardly begun in the area of study.

An overview of the occurrence and spatial distributions of the free-standing megalithic monuments in the area of study may also be instructive, in that the numbers (table 5.1) and the distributions of stone circles (fig. 8.5) and standing stones (fig. 8.7) show quite distinctive features. Apart from the concentration of stone circles on Machrie Moor, only sporadic examples occur in the rest of the study area. Only one (embanked) stone circle is known in Kintyre. Standing stones are more widespread, occurring throughout the area of study. In Kintyre, although the number of standing stones per 100 km<sup>2</sup> is somewhat less than on Arran, actual numbers are greater, presenting a striking contrast with



the occurrence of stone circles (table 5.1). Like Neolithic cairns, stone circles and standing stones are not readily removed, and are unlikely to be hauled away, buried or blasted out unless they obstruct use of the land for agriculture or building. Burl (1976, 8-10) points out that in such circumstances stone circles are often only partially destroyed, some stones often being left for superstitious reasons or because removal proved difficult or dangerous. In the area of study, as we have seen (3.3.2), there are records of partial destruction of Kingarth circle. Bute (BU 31), as well as of preservation of the circle at Ettrick Bay (BU 12), and many of the circles are known from remnants which remain. On the other hand isolated standing stones may be more likely to have disappeared, and indeed there are records of the removal of single stones both in towns and in farmland. Nevertheless the analysis of monuments in relation to present land use, summarised above, has shown that standing stones are associated with land presently used for agriculture. In both Arran and Kintyre they occur on agricultural land more frequently than would be expected were the sites uniformly distributed (5.5.3, tables 5.28, 5.30). Stone circles were found to occur on land used at the present time for agriculture as well as on rough grazing, moorland and wooded areas (5.5.3, table 5.26).

It seems unlikely from these findings that the absence of stone circles in Kintyre and their limited distribution elsewhere results only from destruction of sites, and it is suggested that, as with Neolithic cairns, the present spatial distribution of stone circles, including the concentration on Machrie Moor, may reflect something of the reality of the distribution in prehistoric times.

This is not of course to suggest that the present evidence can be



considered a complete picture. It is likely that more monuments may have existed than are known from the archaeological record. Not only may some have been destroyed without record, but others may remain concealed under peat. The discovery of circle 11 on Machrie Moor (AR 22) reminds us that, although upstanding megalithic circles and stones may remain visible in peaty areas, as was shown for the peaty podzols of Arran in the analysis of monuments and soils (5.4.4, table 5.19), settings of low stones are more easily masked. Moreover, even where upstanding stones are known, other aspects of evidence associated with them may remain undetected. This has been illustrated by the recent discoveries at the former deer park, Brodick, Arran (AR 78) (Fairhurst et al. forthcoming), where the cist was discovered in the course of deep ploughing (Fairhurst 1981, 29) (3.6.2). The possibility that stones may have been moved, either in towns or in farmland, further complicates any very detailed study of location such as that undertaken by Thom. The moving of stones is sometimes recorded as for the Dagon Stone, Loudon, Ayrshire (AY 59) (Mann 1923) and stones on Kintyre farmland (RCAHMS 1971, 62), but may often be unknown.

#### Cup-Marked Rocks

One of the problems concerning cup-marked rocks is the intensity of field work required to ensure a complete record because of their invisibility in the landscape. They will not be noticed from a distance and may even be missed from near at hand. This may be illustrated by the fact that a significant increase in known cup-marked rocks on Bute has taken place since the data file was completed as a result of recent field work (Marshall 1985). Another problem, noted by Morris and Bailey (1966, 151), concerns changes in the carvings at some sites which they re-visited due to erosion or to growth of vegetation. We cannot

assume therefore that in the long term the picture will remain static, as is illustrated by the recent discovery at Catrine, Ayrshire, already mentioned. Here the carvings came to light in the course of thinning of the surrounding wood. Another possibility which should not be discounted is that the type of rock may have affected the lasting qualities of the carvings. Morris (1969, 46) suggested that differences in the hardness of the rock, and hence in difficulty or ease of carving, may have affected the designs used. It seems also possible that some carvings on the more easily carved sedimentary rocks may have disappeared. The fresh condition of some cup-markings which have been protected from erosion, as for example the carving at Lenihuline cairn (BUT 3) (BU 7) mentioned above, would support this suggestion.

#### 8.3.4 Discussion

##### I Stone Circles

##### A. Frequency and Distribution

The most striking feature to be noted from the frequency and distribution of stone circles in the area of study (table 5.1, fig. 8.5) is the concentration of these monuments on Arran. Of the stone circles recorded in the data file 17 out of 27 are located on Arran. Elsewhere their occurrence is most noticeable on Bute. They occur sporadically in the Ayrshire-Renfrewshire mainland, are almost lacking in Kintyre and are absent in Cowal and the small islands. The other striking feature is that within Arran there is the very marked localised concentration of

stone circles on Machrie Moor. From the study of the formation of the archaeological record, it was concluded (8.3.3) that the known frequency and distribution is likely to reflect something of the reality of the occurrence of stone circles, especially of monuments consisting of upstanding megaliths, and it is from this standpoint that the monuments will be considered.

As we have seen above (8.2.4:B) the Neolithic cairns of the area of study appear as occasional focal points in the landscape. Their uneven occurrence in the area of study was however found to reflect the history of their appearance and development as well as relationships within the region. The regional cluster of Neolithic cairns on Arran is not, as we have seen, localised, for, although pairs and small groups occur, the monuments are widely dispersed around the southern half of the island. It is with the appearance of the stone circles that the restricted area of Machrie Moor emerges as a focal point for monuments within the region.

#### B. Appearance, Form and Function

The area defined by the facade and forecourt of the 'Clyde' cairns formed, as was described above (8.2.4:F), an enclave for ritual which was located within a precinct exclusively dedicated to the dead. Power derived from rituals and ceremonies held in the forecourt most likely therefore stemmed from movement between the living and the dead, and aspects of the architectural development of the cairns appear to reflect ways in which this relationship may have changed through time.

The area defined for ritual or ceremony by stone circles was not primarily associated with mortuary practices, although these sometimes



came to be associated with the monuments, as for example the Food Vessel burials within the circles on Machrie Moor, or the use of stone settings in ring cairns and similar monuments. On Machrie Moor a series of ritual areas of different designs seems to have been developed, and standing stones may have been associated in the ceremonial complex, as is discussed below. Roy et al. (1963) found that the circles which they surveyed, circles 5, 3 and 1 (AR 17, 19, 21), ranged in diameter from 6.4 m. up to 18.1 m., and comprised a variety of ellipse, egg and circle shapes, including both plain and concentric rings (fig. 8.6). Fleming (1972) has suggested that the use of non-circular designs may have created focal areas within the circle. These may have kept the attention of participants within the circle on those who took a lead in the ceremonies which were performed. The dissimilarities in design are emphasised by the use of distinctive kinds of stone, which contrast with each other - low, grey granite blocks and tall, red sandstone slabs. We have no way of knowing the intricate detail of the ritual practices which may have taken place, but the spaced megaliths set into the landscape and standing open to the elements (plates 9-12), suggest a connection between life and work on earth and events in the sky. We know that the stones of circle 1 (AR 21) were erected on land set aside from agricultural use (Haggarty 1985, 1986). The reserved areas seem then to have been returned from the cultural to the natural world, suggesting dedication to communication with, or mediation of, natural forces which may influence the well being of the living.

As we have already noted (8.2.4:H), this transition in the provision for ritual is signalled by the filling and blocking of the chambered cairns. With the ancestors no longer relevant in authorising the power of

the living, claims may now have had to be made on powers or forces which reached higher than the ancestors and beyond the confines of ancestral lines. As we have seen, the evidence of the filling and blocking of the chambered cairns indicated a growth in the power of leading or dominant groups. This may have come about as inequalities of access to land and resources pointed up contradictions within the supposedly undifferentiated groups for whom the chambered cairns had been envisaged, and limitations on participation in exchange networks encouraged the emergence of elites within society.

If, as was suggested (8.2.4:H), the scale at which leaders operated was increasing and the areas in which control could be exercised extending, there is likely to have been competition as well as coalition, with consequent discontinuities as well as a trend towards direction at regional level. The building of new monuments may then have encouraged regional identity and loyalty (Cherry 1978). At Machrie Moor there seems to have been a short period of reduced agricultural activity towards the end of the third millennium bc (Robinson 1981, 95) (6.3.2, table 6.1). This may indicate social disturbance (cf. Bradley 1984a, 33-37), although the local wet conditions for which Robinson found evidence should not be forgotten. How this period may have been related to the building of the circles on Machrie Moor remains uncertain. Less specifically it may be valid to connect the appearance of the stone circles with the realisation, among people, who had become increasingly committed to the farming way of life and its vicissitudes, of ultimate dependence on the forces of nature. Through repetition it may have come to seem as if the cycle of the rituals itself controlled the turning of the year and the coming of seedtime and harvest at their due season.



The stone circles of the Firth of Clyde are modest in comparison with complex monuments elsewhere. While we must envisage that they form part of a more widespread process of regional integration taking place throughout the British Isles, possibly fostered by the wide networks of specialised interaction, their location is likely to be related to the particular circumstances and context of the Firth of Clyde.

### C. Location

The location of a complex of ceremonial monuments, which seems focal to the region, such as the stone circles on Machrie Moor, is therefore likely to depend on historical circumstances and regional relationships as well as the environmental factors which were shown from the analysis to have influenced the location of stone circles more generally throughout the area of study. From this analysis, summarised above (8.3.2), we can suggest that the site chosen for the stone circles would most probably be an accessible area of fairly low-lying raised beach deposits, where humus-iron podzols are now developed, and which offered a prominent and commanding position, possibly on an area of outcropping rock. All of these locational attributes are present on Machrie Moor. The unusually large extent of humus-iron podzols in this area (5.4.4) might in itself have made Machrie Moor an attractive location for the monuments, especially if it was important that they could be set in the midst of a settled agricultural landscape (6.5.2). The boss of sandstone rising from the moor offers a measure of separation along with the prominence and visibility which were important. It is when we consider the location within the wider landscape, however, that the uniqueness of the setting



becomes apparent. Similarities may be noted with locations of other stone circles in the area of study, notably the circles on Bute, but they lack the spaciousness of Machrie Moor and the grandeur of the mountain setting (plates 9-12). In this vast area isolated monuments might be lost. It is as a group that they impress with their visibility and prominence. The detailed topography of the central raised area of the moor on which the circles stand was studied by Barnatt and Pierpoint (1983) (fig. 8.5). They found that the stone circles occupy only one of three possible visually prominent zones. Whilst this is the largest of the three, it was also judged to offer 'optimally prominent locations' (1983, 106), and may also have been chosen because it commands a clear view up Machrie Glen to a point demarcating the sunrise at midsummer. There is some agreement that the circles on Machrie Moor are unlikely to incorporate high precision astronomy (sensu Thom) (Burl 1976, 147; 1982, 153; Barnatt and Pierpoint 1983 - with comments by Ruggles). However, the choice of a setting with this astronomical feature in mind, which could have been made on the basis of practical knowledge of the area, would be in keeping with the interpretation of the ritual function of the circles discussed above. It is often suggested that stone circles had a function as meeting places for communities and as foci for exchange and interaction, and the importance of such periodic gatherings in pastoral economies is also often stressed (e.g. Fleming 1971a). The ability to determine the time of midsummer sunrise would allow the fixing of times for such gatherings, which may have been important if they were concerned with replenishment of stock in spring or adjustment of numbers before winter.

If we consider the location of this new and important complex of monuments in the historical and regional context, the choice of Arran

seems even more compelling. We have seen that, through its unique range of resources and its prominent position in the Firth of Clyde, it may have achieved an established position as a centre for interaction and exchange both within the region and beyond. Moreover it was already perceived as a 'place for monuments', as is indicated from the concentration of Neolithic cairns and the preoccupation with their aggrandisement (8.2.4:G). Within Arran we know that Machrie Moor had a long tradition of activity going back to Mesolithic times. The existence of several Neolithic cairns on the moor may have reinforced its importance, and contributed to ideas that this was an area appropriate for ceremonial monuments. In addition it occupies a commanding position adjacent to the Kilbrannan Sound. This offers an easy passage to and from Kintyre, as well as being an important sea link connecting Ireland or the south with the west and north of Scotland. An easy pass affords access to Brodick and the east coast of Arran, also an area of Neolithic and early Bronze Age activity, and facing sea routes into the Firth of Clyde.

## II Standing Stones

### A. Frequency and Distribution

It has already been observed (8.3.3) that standing stones are much more widely distributed throughout the area of study than stone circles. Their frequency of occurrence is shown in table 5.1, where it will be seen that the total number is much larger (66 compared with 27), and that standing stones occur in all the sub-regions of the area of study, including the small islands, where, as we have seen (8.2.4:B and above),



Neolithic cairns and stone circles are lacking. From table 5.1 it can be seen that more standing stones occur in both Kintyre and on Arran than would be expected were the distribution of the stones uniform throughout the area of study. The smaller number than would be expected in the Ayrshire-Renfrewshire sub-region is in keeping with its low density of sites overall. The density of sites per 100 km<sup>2</sup> is fairly consistent in Bute, Kintyre and Cowal, and somewhat lower than that on Arran.

The spatial distribution of standing stones in the area of study (fig. 8.7) illustrates this widespread occurrence. However concentrations of standing stones may also be noted. Examples are the Machrie Moor area of west Arran, the area surrounding Brodick, east Arran, the Laggan area of Kintyre and the area around Ascog Bay, Cowal. These can be seen to correspond to areas where Neolithic and, or, early Bronze Age activity, as indicated by the monument evidence seems to have been strong (fig. 8.7 cf. figs. 8.1, 8.10, 8.12). In two of these areas, the area around Brodick (details: Ordnance Survey index cards nos. 03SW23-40) and the Laggan area of Kintyre (details: RCAHMS 1971, 9-10), activity in the early Bronze Age is further attested by the frequent discovery of small finds. As we have seen (6.3.) palaeobotanical evidence from both Machrie Moor (Robinson 1981) and Aros Moss (Nichols 1967) suggests increased agricultural activity for the early Bronze Age. The occurrence of standing stones in Ayrshire is also in keeping with the increase in activity in the early Bronze Age suggested both from the palaeobotanical evidence discussed above (6.3) (Turner 1970), and from the evidence of Bronze Age burials (8.4). The occurrence of standing stones on the islands of Gigha and Little Cumbrae is in keeping with the extension of activity to the small islands, mentioned above (6.6.2), which is also



suggested by the appearance of burial monuments in the early Bronze Age (8.4).

### B. Location

The results of the analysis of location factors, summarised above (8.3.2), also supports the finding that the distribution of standing stones falls within areas of prehistoric activity. Here it was shown that standing stones occur more frequently than would be expected from a uniform distribution in locations similar to those of many of the other monuments, especially the burial monuments of the early Bronze Age. Thus they are located in coastal and lowland positions which are accessible. They occur on raised beach deposits and are associated with areas of present humus-iron podzols, especially on Arran, and with areas of present non-calcareous gley soils in Kintyre - areas of present agricultural land. Here we may recall that study of the archaeological record (8.3.3) indicates that more standing stones may have been located both on present agricultural land and in areas presently built-up than are known today. As with the other monuments, south-west facing slopes are favoured, but standing stones also occur on hill-top and crest of ridge positions, hardly surprising in view of a likely function as markers. This is in keeping with the finding that they occur less often than would be expected in positions that were rated not prominent or conspicuous.

### C. Function

Consideration of possible functions of standing stones equally

suggests that they would be very much a part of the prehistoric secular and ceremonial landscape. The erection of a stone suggests the marking of something considered important, whether the purpose be to focus attention, to commemorate an event or person, to enhance an associated structure or to locate a significant point in the landscape not otherwise apparent. Standing stones may have fulfilled a range of practical purposes in prehistoric times. These could include marking routes and boundaries or indicating clearance areas in the forest. Such uses may have incorporated a ritual or symbolic significance, although this is most clearly suggested where standing stones are associated with another monument or form part of a complex of monuments as on Machrie Moor. In such cases, as well as serving as markers, they may have played an important role in ritual and ceremony in defining pathways of access and marking focal points or areas. It should however be remembered that the chronology of the erection of stones in relation to the development of a monument complex through time may be as unclear as the sequence of construction of standing stones associated with cairns and cists. In the same way it may be difficult to suggest an astronomical significance if uncertainties exist about the chronological development of a monument (Ritchie 1982). Yet, as Fleming has pointed out (1975) this is something which should be intrinsic to design and function. An example here from the area of study is the site of Ballochroy, Kintyre (KT 5), discussed below. Another is the site of Kintraw, Argyll, not far to the north (MacKie 1977, 81-92).

The close integration of many standing stones into the monumental landscape, in something of the manner already suggested for Machrie Moor, may be illustrated from further examples. Of the standing stones in the vicinity of Clyde cairns the most impressive is the huge monolith erected

behind the cairn at Beacharra, Kintyre (ARG 27) (KT 13) (plates 2, 3). Not only is it very near to the cairn, but it also lies on its projected axis, suggesting a link between the two monuments. Its presence may thus have both drawn attention to the cairn and enhanced its impressive appearance, although it should again be stressed that the chronological sequence is unknown. These factors should not be overlooked, even if, as Thom has suggested (1971, 60-1), there is reason to suppose that it was also positioned with a view to observing the moon. A frequent association is with Bronze Age burial sites. The cist at Brodick Castle deer park (AR 78) (Fairhurst 1981, 29, Fairhurst et al. forthcoming), of which there is a reconstruction in the museum at Brodick, is in line with two of the three tall standing stones erected nearby. Whether the third standing stone was related to this or to other burials in the vicinity remains uncertain, but it is quite probable that the monuments here were located in a ritual area which may have included a stone circle once situated on the other side of Rosa Burn (AR 77). It may be noted that standing stones are recorded (Smith 1895, 179) in the vicinity of the Bronze Age cemetery at Doonfoot, Ayrshire (AY 71, 72, 73), excavated by Davidson (Davidson and Scott 1967). At Craighbiorach, Bute (BU 40), where a cup-marked standing stone was associated with a cairn covering a cist, there are reports of other cairns in the vicinity (Hewison 1893, 38-9). There may also have been burial sites near the stone at East Tarbert Bay, Gigha (IS 15) (RCAHMS 1971, 42). Here the stone emphasises the impressiveness of the location on a narrow isthmus commanding extensive views across the sea, and may, as Thom suggests (1971, 61-2) have been erected at a particular point, where it was possible, on the right night, to watch the moon both rising and setting at its most northerly location.



A standing stone at Barlea, on the Kintyre peninsula a little to the south of Gigha (KT 25) is very closely associated with a cairn and possible cist (RCAHMS . 1971, 39, 62). The excavation of a cairn at Cnocan Sithein, Machrihanish, Kintyre (KT 45) (Seton 1831) was noted (3.3.1) as being one of the first to be recorded within the area of study. It was found that the central cist within the cairn was in alignment with three standing stones known to have once stood to the north of the cairn. Strangely it was the discovery, from documentary evidence discussed above (3.2.1), that a huge cairn is likely to have covered the large overground cist at Ballochroy, Kintyre (KT 6) (RCAHMS 1971, 46-7) which has been one of the factors contributing to the controversy surrounding the possible astronomical significance of the stones (plate 4) which Thom proposed (1967, 151-4; 1971, 36-7). This site has been much discussed - by MacKie (1974), Burl (1980b), Patrick (1981) Moir (1981) and other writers.

The dangers of uncritical selection of conveniently oriented stones and stone rows which appear to have astronomical significance have recently been much stressed (e.g. Fleming 1975; Burl 1976, 39, 243-4; Ruggles 1984, 15), and seen to be particularly acute in an area such as western Scotland, where the topography ensures an infinity of possible horizon features. In the area of study Thom's suggested alignments of lunar or solar significance (1971, fig. 11.1) are located in Kintyre and Cowal. The wide distribution of standing stones within the area of study would suggest the importance of more rigorous study if we are to assess the evidence for the astronomical significance of standing stones at regional level. It would be interesting for example to see an extension of the recent study by Ruggles of free-standing megalithic sites in western Scotland to the rest of the Firth of Clyde. For Kintyre the

results differed from those for sites further north in indicating that the orientation of some stones may have been on the position of sunset at the winter solstice (Ruggles 1984, 285).

### III Cup-Marked Rocks

#### A. Frequency and Distribution

The frequency of occurrence of cup-marked rocks in the area of study is shown in table 5.1. A marked contrast may be noted between the large numbers of sites recorded in Kintyre, Cowal and Bute and the small numbers in Ayrshire and Renfrewshire and on Arran. This impression is reinforced if it is recalled that some sites have been discovered in Bute since the data file was completed.

The spatial distribution of the sites within the area of study (fig. 8.8) shows that the majority lie around the western and northern fringes of the area of study in a band stretching from the west coast of Kintyre, across Cowal and the north of Bute. The small cluster of sites in the north west tip of Renfrewshire, discovered in field work in the 1960s and 1970s, could be considered in keeping with this pattern. Within this distribution, concentrations may be noted, particularly in the west and north east of Kintyre. In Ayrshire and on Arran, however, the occurrence of cup-marked rocks is sporadic.

These findings suggest that for the area of study the main weight of the distribution of cup-marked rocks is located at some distance from the major concentrations of the other monuments, and with a pattern of distribution which is quite distinct (fig. 8.8 cf. figs. 8.1, 8.5. 8.7,

8.10, 8.12). This is illustrated from their infrequency on Arran, where as we have seen, there are concentrations both of Neolithic cairns and stone circles. If present knowledge of cup-marked rocks in the area of study is a correct reflection of the prehistoric distribution, there would seem to be a difference between the Firth of Clyde region and the Kilmartin area of Argyll to the north, where cup-marked rocks seem more integrated into the monument landscape, occurring within as well as in the vicinity of the complex of ceremonial monuments (MacKie 1975, 142-53; fig. 18).

### B. Location

However, as was discussed above, the present archaeological record may be biased by variations in field work. A more serious question is whether cup-marks which existed on softer sedimentary rocks, more subject to erosion, may have weathered to the extent that they are no longer easily recognised. Relevant here is the finding from analysis that cup-marks are particularly associated with the hard rocks of the Dalradian series (8.3.2). The association is most evident in Kintyre (table 5.8), being less obvious in Cowal (table 5.9), although here the cup-marks are also located on Dalradian rocks. It may also be noted that the cup-marks recently added to the record for Bute (Marshall 1985) also lie on Dalradian schists to the north of the Highland Boundary Fault. Calculation from tables 4.1 and 5.4 shows however that the Dalradian schists of Kintyre, Cowal and Bute, taken together, comprise 94% of the total within the area of study. None occurs in Ayrshire and Renfrewshire, and only 5% is on Arran. It is difficult to know whether the determining



factor may have been geographical location or rock type, or indeed whether the archaeological record reflects preservation and destruction patterns. It may however be suggested that Kintyre seems to have been a particular focus of cup-marking.

It is thus clear that, even were the original distribution of cup-marked rocks more widespread, time and effort were spent in carving rocks in what appears to be a peripheral area in terms of both burial and ceremonial monuments, and in terms of likely areas of settlement. Moreover in several other respects the location of cup-marked rocks differs from that of the other monuments. Although sharing the general coastal distribution, cup-marked rocks occur at higher elevations, and were more often found to be in inaccessible locations than the other monuments. They are also atypical in being located in positions which were in general considered not prominent. This last finding is borne out by their invisibility in the landscape except at very close range, and the difficulty experienced in finding known examples. West and south west facing slopes seem to have been favoured in line with the other monuments. In addition there is some preference for south east facing positions. It may be noted that these are slopes which catch low morning or evening sun (cf. Morris 1971).

### C. Comment

These findings are not easy to interpret when so little is understood about the meaning of cup-marking and the reasons for their occurrence in concentrations. A distribution which includes concentrations in what seem to be peripheral areas suggests that the making of cup-marks must have

carried some particular importance. This impression is supported from the realisation that this involved reaching, and spending time in, remote locations in order to create carvings whose impact was quite localised. Piggott and Henderson (1958, 61) suggested links between cup-marking and metal-prospecting, and Morris has pointed out that cup-marks are often located in the vicinity of known deposits of gold or copper (1967, fig. 6; 1968, fig. 2). While within the area of study this could be suggested for Ayrshire (Morris 1967), it does not, as Morris points out (1969) hold for the major concentration in Kintyre. A significance which went beyond any practical application which cup-marks may have had seems indicated. It is perhaps best to avoid speculation on practical possibilities, and view cup-marking as part of the complex web of symbols apparent in a variety of artefacts in the later Neolithic and early Bronze Age. A relationship to the sun is often suggested (Morris 1967, 1969; Simpson and Thawley 1972) and would be in keeping with the findings for aspect for the area of study. For Kintyre this is interesting in view of the findings of Ruggles (1984) concerning the orientation of standing stones, discussed above. The repeated activity which concentrations and groups of carvings suggest, and their association with the living rock, could indicate magical ceremonies, perhaps connected with the power of natural forces (cf. Simpson and Thawley 1972). These conjectures would be in keeping with the ideological development which, it was suggested above, may also have found expression in the architecture of the stone circles, while the use of cup-marked slabs in burial cists of the early Bronze Age may be linked with ideas about life and death in something of the way that is suggested by the placing of burials within the stone circles.

## 8.4 Burial Sites of the Early Bronze Age

### 8.4.1 Introduction

The burial monuments of the early Bronze Age have been divided into two broad classes in the analysis for this study (chapter 5, Notes to Appendix 1). Each comprises a range of architectural forms, which, as we will see, are all markedly different from the Neolithic cairns, with their segmented chambers, facades and forecourts, which were discussed above (8.2.4:F).

### Bronze Age Cairns, Mounds and Related Monuments (fig. 8.11)

Burials may be covered by simple round cairns of stones or stones mixed with earth and turf. Sometimes such cairns comprise an inner cairn of stones covered by an outer layer of earth or turf, and cairns may be bounded by a kerb. Cairns or mounds may be built over single or multiple burials in cists or pits. The latter represent a sequence of development, sometimes including a phase when the site remained uncovered. One such cairn in the area of study at Balnabraid, Kintyre (KT 57), was re-investigated by Ritchie (1967). Two recent radiocarbon determinations for such monuments may be noted. The ground surface beneath a kerbed cairn at Kilpatrick, west Arran (AR 38), was dated to  $1885 \pm 55$  bc (GU-1177) (Barber 1980 and forthcoming, Barber 1982). This cairn had contained an AOC Beaker. At Balloch Hill, Kintyre (KT 48), a radiocarbon date of  $1410 \pm 70$  bc (HAR 1902) was obtained for a cremation burial in a Cinerary Urn which also contained a pygmy vessel. The burials were sealed under a mound truncated by the rampart of the hillfort (table 6.1).

A complex sequence of use for burial, possibly over a period of time,



is also likely for many ring monuments. Burgess has illustrated the number of ways in which cairn material was used, sometimes combined with stone settings, to form the circumference of these monuments (1980, fig. 7.5). Definitions by Ritchie and MacLaren (1972) of ring-cairns, kerb-cairns and enclosed cremation cemeteries, are based on Scottish examples, including the sites at Muirkirk, Ayrshire, for which the evidence was re-examined by Ritchie (1970). The suggested chronology again relies mainly on artefact evidence. Burgess (1980, 309) considers that ring monuments may have become prominent in his Overton and Bedd Branwen periods (c. 1700-1450 bc, c. 1450-1250 bc). This would be in keeping with the findings of Ritchie and MacLaren (1972) for ring-cairns. Radiocarbon determinations suggest that enclosed cremation cemeteries should be placed in the middle and second half of the second millennium bc (Ritchie and MacLaren 1972). A date of  $1360 \pm 90$  bc (GaK-461) was obtained for material associated with a Pygmy Vessel at Whitestanes Moor, Dumfries, to the south of the area of study (Scott-Elliott and Rae 1965).

#### Unmarked Bronze Age Burial Sites (fig. 8.13)

Burials in cists and pits, found unmarked, also occur singly and as cemetery sites. Flat cist graves are very typical of northern regions of Britain. They are normally built of flat stone slabs, with or without a floor slab, and covered with a capstone. They may be well-fitted to an accurate design or of less regular, loosely built construction. They are usually of rectangular shape, but polygonal cists are also known. The occurrence of cup-marked cist slabs and covers, already mentioned (8.3.1, 8.3.4), suggests that sometimes particular stones were procured. Features of some cists, such as the luting of joints with clay, or the preparation of the grave floor with paving, pebbles or sand, suggest careful

preparation and building. Cists vary in dimensions, but the majority are of a size which would contain a contracted body. However both cremation and inhumation burials are known, as well as multiple depositions in one cist. One of the cists at Clachbreck, Knapdale, north of the area of study, contained as many as four or five deposits (Campbell 1963). The association with Food Vessels, strong in the area of study, suggests dates around the middle of the second millennium bc (7.6.2). It is sometimes suggested (e.g. Burgess 1980, 308) that such cists may originally have been covered by a mound. This is difficult to determine, especially when the sites are largely found in areas disturbed by development or agriculture (5.5, 8.4.2). The five cists discovered at Glenreasdell Mains, Kintyre (KT 87) (MacLaren 1969) were located in and around a low natural mound. The marking of cists by standing stones has already been mentioned (8.3.4). Low natural mounds of gravel also seem to have been a focus for 'flat' urn cemeteries, as was suggested by Munro (1910) in discussion of the site at Nelson Street, Largs, Ayrshire (AY 10). Again these may comprise both cists and pits.

#### Appearance of Individual Burial

As has already been mentioned (7.5.1), it is now accepted that the introduction of Beaker pottery can no longer be taken to mark a departure from 'communal burial' in long mounds and the initiation of a 'single grave' tradition of burials accompanied by grave goods and covered by round mounds (Petersen 1972, Burgess and Shennan 1976, Kinnes 1979). It is likely that individual burial under small cairns or mounds, or in cists below the ground, may have had earlier beginnings in the area of study also, but, if this is so, they remain difficult to document. The first clear record of individual burial which emerges in the archaeology of the



Firth of Clyde is the complex range of burials prominent in the record of the early Bronze Age. As was noted (1.2.4) this evidence suggests choices in the treatment of individuals at death, not only in the architectural form of burial monument, but in the funerary rituals as well as in the artefacts used as grave goods (chapter 7). These burial monuments may therefore represent a development from an existing burial tradition, not visible to us, and the incorporation within it of symbols which appeared at this time.

The small number of Beakers associated with burials in the area of study may suggest that the introduction of Beaker pottery was not a strong influence in the development of early Bronze Age burial traditions, especially when compared with the strong Food Vessel and Cinerary Urn elements (7.5, 7.6, 7.7). However, as will be discussed below, in a number of instances it may be suggested that Beaker pottery was deposited in the initial stages of Bronze Age burial monuments. The recognition that the traditional chronological sequence for Bronze Age pottery and burials is not of general validity (1.2.6, 7.6.1) has stimulated interest in interpretations of the complex record of monuments and deposits based on social rather than chronological distinctions. A shift from viewing mortuary practices as expressions of cultural belief to considering variations in their complexity as corresponding to the degree of complexity in the organisation of society was initiated in the work of Saxe (1970) and Binford (1971). Approaches to archaeological evidence from this standpoint have been developed in subsequent work (e.g. studies in Chapman et al. 1981). The problems of study of burial and ritual evidence in isolation have already been mentioned (1.2.3), and the circularity of argument in seeking to explain variations in mortuary practice in terms of



general process has recently been pointed out by Barrett (1987a).

The placing of symbols indicative of individual prestige within a burial monument suggests recognition by the living of the status of the dead. The appearance of such burials in the archaeological record may then, as is often suggested, reflect a move away from ritual authority, such as seems to have been established through the building and ceremonial of the stone circles (8.3.4:I:B), and the rise of secular authority (cf. Cherry 1978, Bradley 1984a, 75). The prestige artefacts may be an indication that powerful individuals existed. They do not however tell us how this power may have emerged or authority developed. These processes may be better understood if the monument evidence is placed in the context of the social and economic development likely to have been taking place within the region.

#### 8.4.2 Location Factors

The results of the analysis of location factors presented in chapter 5 which are relevant to Bronze Age cairns and unmarked burial sites are given in the following summary.

##### 1. Sites and Altitude, Sites and Distance from the Sea,

##### Accessibility (5.2)

##### Altitude

While it was found that the majority of Bronze Age cairns are located in lowland positions (5.2.3), some occur at higher elevations (fig. 5.12). This spread is not apparent for unmarked Bronze Age burial sites. All the examples known were found to be located at elevations below 150 m., with the majority below 50 m. (fig. 5.13).

### Distance from the Sea

The majority of Bronze Age cairns were found to be located very near the coast (5.2.6, fig. 5.12), but some few occur inland, and examples at some distance from the coast reflect inland activity in Ayrshire (cf. fig. 5.3). For the unmarked burial sites the bias towards locations very near the coast is clear (fig. 5.13).

### Accessibility

Analysis of the accessibility ratings showed that the numbers of Bronze Age cairns rated accessible and inaccessible are at expected values (table 5.3). Unmarked burial sites are however much less frequent in inaccessible positions than would be expected (5.2.8).

## 2. Sites and Solid and Drift Geology (5.3)

### Solid Geology

Bronze Age cairns occur with slightly greater frequency on igneous intrusions than would be expected from a uniform distribution (5.3.3, table 5.6), and some fewer than would be expected occur on Dalradian schists.

### Drift Geology

The analysis here showed that both Bronze Age cairns and unmarked burial sites occur with very much greater frequency on raised beach deposits than would be expected were the distribution uniform (5.3.2, table 5.6). This is evident for Arran (table 5.10). For Ayrshire the association of unmarked burial sites with raised beach deposits is the dominant feature (table 5.7). An association of Bronze Age cairns with raised beach deposits may be suggested for the small islands (table 5.12), but here numbers are small. Fewer Bronze Age cairns and unmarked burial sites occur on glacial deposits than would be expected from a



uniform distribution.

### 3. Sites and Soils (5.4)

The association of monuments with the humus-iron podzols developed on raised beach deposits in the island and peninsula zone of the study area remains noticeable for Bronze Age cairns and unmarked burial sites (5.4.3, 5.4.4, table 5.15 and cf. table 5.23), with Arran again being an example (table 5.19). Here and in Kintyre (table 5.17) fewer sites than expected occur in areas of present peaty gley soils. In Kintyre Bronze Age cairns were found to occur more frequently than would be expected in areas of present non-calcareous gleys. On Bute Bronze Age cairns and unmarked burial sites occur in relation to present brown forest soils and the gley soils around expected frequencies (table 5.20), and in the small islands this is true for Bronze Age cairns (table 5.21), although in these cases the numbers of sites are small. In Ayrshire the occurrence of Bronze Age cairns on brown forest soils was found to be close to the expected frequency (5.4.3, 5.4.4, table 5.16). In keeping with the general trend the frequency of Bronze Age cairns and unmarked burial sites is lower than expected in areas of present peat (5.4.2, tables 5.14, 5.15).

### 4. Sites and Land Use (5.5)

The very strong association of unmarked Bronze Age burial sites with areas presently built up is the most significant feature to emerge from this analysis (5.5.3, 5.5.4, table 5.26). This is most evident in Ayrshire (table 5.27), but may also be seen in Kintyre (table 5.28). That this reflects the association of these monuments with raised beach deposits noted above was shown in tables 5.33 and 5.34 (5.5.4). The increased frequency over that expected in records of Bronze Age cairns in areas presently built up is less striking, although again apparent in



Ayrshire.

Another important feature - the occurrence of unmarked burial sites with a frequency greater than expected on present agricultural land - is apparent in the island and peninsula zone of the study area, but not in Renfrewshire and Ayrshire (5.5.3, 5.5.4, table 5.27 cf. tables 5.28-5.32). Relevant to this distinction may be the discussion (5.5.4) of the finding, from comparison of tables 5.33 and 5.34, that, whereas in the island and peninsula zone monuments on raised beach deposits are also mainly on agricultural land, in Ayrshire and Renfrewshire monuments occur on agricultural land which is associated with a wider range of geological deposits.

Throughout the area of study (tables 5.26-5.32) unmarked Bronze Age burial sites occur much less frequently than would be expected in areas of present rough grazing and moorland or in areas presently under forest.

As was seen from table 5.26, Bronze Age cairns occur on both present agricultural land and in areas of rough grazing and moorland. In Ayrshire (table 5.27) numbers of cairns fall just below the expected value on agricultural land and just above the expected numbers are in areas of rough grazing. For Bute (table 5.31) and Kintyre (table 5.28) as well as for the few sites on the small islands (table 5.32) numbers are close to the expected values, while for Arran (table 5.30) and the small number of sites in Cowal (table 5.29) cairns occur with some greater frequency than would be expected on present agricultural land.

## 5. Sites and Aspect, Sites and Prominence (5.6)

### Aspect

The findings concerning Bronze Age cairns showed a preference for south-west facing slopes, in keeping with a general trend for sites in the

area of study (5.6.5, tables 5.36, 5.37). This shows some agreement with the findings of Yates (1984, 153) that southerly and westerly slopes were favoured for Bronze Age cairns in Dumfries and Galloway. However it was also noted that there were many more Bronze Age cairns than would be expected from a uniform distribution on hill top and crest of ridge positions, a particular example being Ayrshire (table 5.38), and markedly fewer than expected on the flat ground. Unmarked burial sites contrasted with Bronze Age cairns and with the other monuments in having frequencies for aspect nearer to expected values, suggesting that aspect may have been less important in choice of site location.

#### Prominence

Bronze Age cairns were found to occur less often than would be expected from a uniform distribution in positions rated not prominent or conspicuous (table 5.45). They were found to occur in locations rated commanding as well as in ones rated locally prominent and conspicuous. Unmarked burial sites however were found to occur less frequently than would be expected in positions rated prominent or conspicuous.

### 8.4.3 The Archaeological Record

#### Survival and Discovery

Two themes concerning Bronze Age burial sites were recurrent throughout chapter 3 - the discovery and the destruction of sites during agricultural improvement or building and development work. Both are important in assessing the extent to which the known distributions of these sites reflect prehistoric activity within the area of study.

Stevenson (1975) has discussed ways in which the archaeological

record may reflect patterns of survival and discovery. For the cairns survival potential is important. Larger burial cairns may be more likely to survive in agricultural land, small cairns being more easily dismantled. Cairns will survive in areas of moorland and rough grazing, but here smaller cairns may be masked by vegetation or accumulation of peat, as has been demonstrated in the study area from the recent discoveries in west Arran (Mercer 1976, 1978; Barber 1980 and forthcoming; Barber 1982) (3.6.2, 6.5.2). For the unmarked burial sites potential for discovery is the critical factor. Cists are unlikely to be discovered in unimproved land, but may come to light wherever disturbance takes place. Being of solid construction they may be more likely to be noted and recorded than uncisted burials, which, as we have seen (7.7.1), are easily destroyed. As was noted above (3.6.1, 5.5.4), we should not assume that remnants of cairns or unmarked burial sites will have been detected in recent development work or re-afforestation using modern machinery.

It is possible to confirm from the quantitative analysis of location factors summarised above associations of Bronze Age burial sites with areas of discovery and survival sensu Stevenson. The association of unmarked burial sites with areas of raised beach deposits which are presently built up (5.5.3, 5.5.4) is the most striking indication of likely areas of discovery. This is illustrated most clearly by the evidence from Ayrshire, where disturbance of the coastal strip through nineteenth century and early twentieth century development of towns, industry and transport was most intense (3.5.1, 3.6.1), but may also be suggested from the evidence from the area of development around Campbeltown in Kintyre.



For the island and peninsula zone the association of unmarked burial sites with areas used for agriculture in recent times, including but not restricted to the pockets of humus-iron podzols (5.4.3, 5.4.4, 5.5.3, 5.5.4), confirms that present agricultural land is also likely to be an area of discovery. However numbers of unmarked burial sites on present agricultural land in Ayrshire and Renfrewshire (table 5.27) show a slight shortfall in comparison with the expected frequency, suggesting (contra Stevenson) that this was not an area of particular discovery or recording of these sites. The slight shortfall in frequency of Bronze Age cairns in these areas would on the other hand be in keeping with Stevenson's proposition that some cairns are likely to have been destroyed in agricultural improvement. It is difficult to reach a conclusion concerning the interpretation of these findings. It may be, as was suggested above (3.2.2, 5.5.4), that this was an area where the potential for destruction without recording during the very early, rapid and intensive agricultural improvements was greater than, for example, in Bute where improvement was less radical and a tradition of awareness of antiquities was established from an early date, or in Arran or Kintyre where agricultural improvement came later (3.3.2, 3.7). On the other hand, the findings for Ayrshire may suggest that the bias towards a coastal distribution, apparent from the analysis for both unmarked burial sites and cairns, reflects some of the reality of Bronze Age burial activity. This latter suggestion cannot however be supported from the lack of evidence of unmarked burials on the peaty soils and in areas of rough grazing and moorland, for these are areas in which such sites could be present but remain undetected. Moreover the analysis of location factors for Bronze Age burial cairns, while sharing with the unmarked

burial sites a bias towards coastal and lowland locations, shows less uniformity and restriction. Cairns also occur in areas of rough grazing and moorland and in inland and upland situations, again in keeping with Stevenson's predictions concerning survival.

### Quality

For the area of study, as elsewhere, there are inherent difficulties in the evidence which limit the potential for research. One problem is that the radiocarbon determinations available do not provide a basis for an absolute chronology. Another is the uneven quality of the archaeological record (3.7). Study of the history of research (chapter 3) has show that much of the evidence comes from sites investigated as a result of disturbance through agricultural improvement or development in the nineteenth and early twentieth centuries. Many of these sites are poorly understood, and the published accounts are not an adequate basis for detailed study (cf. Cogbill 1982). The more recent excavations are therefore of great value, as are the recent re-assessments of sites mentioned above, in forming a core of examples which will form the basis for the discussion below (8.4.4).

Even in recent work, however, the main focus has remained the study of individual sites, often on a 'rescue' basis. It is becoming clear from recent work in Scotland and elsewhere (e.g. Burgess 1980, 314; Barclay 1982, 1983, 1985) that treating individual monuments in isolation may give a less complete picture of the burial evidence than systematic investigations extending to the surrounding area. It seems likely, for example, that the urn cemetery discovered at Monkton, Ayrshire (AY 67) (Webster 1944) may have extended beyond the area of disturbed ground which was investigated, but this was not established. An area around the cists

discovered at Kintyre Nurseries, Campbeltown (KT 61) was investigated by Peltenburg (1979), but no further graves were found. Investigation in the vicinity of the urn burials found at Coalpots Road, Girvan, Ayrshire (AY 105) (MacKie 1966) did however reveal several pits, possibly associated with the burials. As has already been noted (3.6.2, 6.5.2), the evidence for the area in west Arran, where surveys undertaken by Mercer (1976, 1978) were followed by selective excavations by Barber (1980 and forthcoming, Barber 1982) is unique within the area of study. Here Bronze Age burial monuments may be seen not only in relation to other monuments, but also to settlement in the locality and with a clear picture of the contemporary environment. The contrast is marked with the limitations of the main body of the evidence for the Firth of Clyde region and its much less detailed social and economic context.

#### 8.4.4 Discussion

##### A. Frequency and Distribution

The frequency of Bronze Age burial sites in the area of study (table 5.1, shows a marked increase in the number of monuments in comparison with the number of Neolithic cairns. The 70 Bronze Age cairns and 42 unmarked burial sites recorded in the data file make a total of 112 monuments as against the 47 Neolithic cairns. This increase in numbers is even more striking if it is accepted that the Bronze Age burial monuments are unlikely to form a comprehensive record of burial activity, if allowance were made for monuments undiscovered or destroyed, as has sometimes been suggested (e.g. Atkinson 1972). It has been pointed out (e.g. Bradley



1984a, 86) that population estimates based on the burial record are low in relation to the scale of agricultural activity now envisaged, or the effort put into monument building. If this is so it may be that burials in the monuments represent the treatment in death of only some part of the early Bronze Age population (cf. Barrett 1987a). This question was discussed by Clarke et al. (1985) who concluded that access to cairn or cist burial may have been restricted. They quote the results of a study of skeletal material from Scottish cists (Glenn nd.), in which it was found that, allowing for the small sample population available, 'the age/sex proportions did not conform to those expected within a representative cross-section of a population' (1985, 152-3). The implication of social differentiation suggests caution against assuming that Bronze Age burials may contain all the members of an extended family (cf. Petersen 1972, 31), although this should not imply that there was no link with communities (Petersen et al. 1974).

The frequency of early Bronze Age burial sites thus reinforces the difference from the Neolithic cairns, which were found (8.2.4:B) to occur as occasional focal points within the landscape in which burial played only a small part. Moreover the Bronze Age cairns and unmarked burial sites, unlike Neolithic cairns, are widely distributed throughout the area of study (fig. 8.1 cf. figs. 8.10, 8.12), suggesting changes in function and relationship to the regional system. In the first place the distribution of early Bronze Age burial sites extends to all the sub-regions, whereas the occurrence of Neolithic cairns is, as we have seen (8.2.4:B) more restricted. This finding is highlighted by the substantial numbers of early Bronze Age burial monuments recorded in the Ayrshire-Renfrewshire sub-region in comparison with the small number of

Neolithic cairns, even although the number of sites per 100 km<sup>2</sup> (table 5.1) remains low. The high density of Bronze Age cairns in the small islands (table 5.1) is in marked contrast with the absence there of Neolithic cairns. The number of Bronze Age burial monuments on Bute is also striking, and may be compared (table 5.1) with the situation on Arran, where there seems to be some fall-off in the occurrence of Bronze Age burial monuments in contrast with the peak there of the regional distributions of both Neolithic cairns and stone circles (8.2.4:B, 8.3.4:I:A).

#### B. Distribution and Location

The most obvious feature seen from the distribution maps (figs. 8.10, 8.12) is the continuing use of coastal areas. This is borne out by the analysis of sites in relation to altitude and distance from the sea, and by the association with raised beach deposits (8.4.2). While apparent for both cairns and unmarked burial sites, these associations were found to be especially marked for the unmarked burial sites, which were also found to be located predominantly in accessible positions. The association of these sites with built up areas, as on the Ayrshire-Renfrewshire coast, and present agricultural land, as on humus-iron podzols or non-calcareous gleys in the islands and peninsulas, suggested that this distribution may be biased by the discovery of sites in areas which have been disturbed (8.4.3). This likelihood is strengthened by the wider distribution of Bronze Age cairns which extends outwith the coastal fringe. Here some association with 'survival' areas was noted from the occurrence of cairns in areas of present rough grazing

and moorland and in inland, upland and inaccessible locations. While uncertainties remain about aspects of the distributions (8.4.3), one conclusion may be reached - that with the Bronze Age activity in lowland and coastal areas not only continued, but was also intensified.

Within this pattern however important changes should be noted. One is the strong emphasis on locations very near the coast and in very low-lying positions, which was clear from the analysis for both cairns and unmarked burial sites (8.4.2), and points to an extension of activity in areas very near the present coastline. Another is the evidence of burial activity on the small islands of Gigha, Inchmarnock and the Cumbraes. Here, it will be remembered, Neolithic cairns were lacking, but the occurrence of Bronze Age cairns is markedly larger than would be expected were these cairns uniformly distributed within the area of study (table 5.1). An important question is the extent to which this emphasis on burial in coastal areas reflects the pattern of contemporary settlement.

### C. Burial Monuments Settlement and Land Use

#### Lowland Areas

In considering this question we must recall the environmental changes discussed above (2.4.2) resulting from regression of the sea from the maximum of the marine transgression about 4000 bc (fig. 2.1). Although, as was noted, the chronology of this regression is not well understood, it seems likely that in some places land recovery may not have begun until around 3500 bc. Thus, although the onset of recovery is likely to have been within the Neolithic, some considerable time will have elapsed before soil development took place on the unconsolidated deposits of raised beach



material, and before the benches of land forming the lowest raised beaches (the so-called 25' raised beach) became viable for agriculture. This question was considered by Scott (1970), who concluded that the lowest raised beaches of the Firth of Clyde should be discounted for settlement for the whole of the Neolithic, but are likely to have been available by the early Bronze Age. Viewed from this perspective, the association of the early Bronze Age burial monuments with raised beach deposits, along with their occurrence at very low altitudes, suggests an extension of settlement with the uptake of this newly available, accessible and easily cultivated land.

For the small islands access may have been much improved. Great Cumbrae, for example, deprived of the narrow terrace of low raised beach which fronts the old sea cliffs, may have been difficult to approach. Gigha, exposed to open seas, may have appeared rocky and forbidding until the flat coastal areas emerged. As new shelving coastal land appeared, visits may have begun, as is suggested from the finding of polished stone axeheads on Inchmarnock (Marshall 1980) and Gigha. This would again be in keeping with Cherry's findings (1981) concerning the process of colonisation of islands in the Mediterranean (6.6.2): the first settlement was on the larger islands, and this was followed, after a gap in time, by infilling of the small islands until even small rocky islets showed evidence of Bronze Age activity.

The founding of monuments on the islands may then may have taken place as new lands and resources became available on the periphery of existing settlement. However we do not know the extent to which the small islands were permanently settled. The potential for agriculture of Gigha and Great Cumbrae is clear from their history of farming in recent times

(chapter 3), and one could envisage the continuing use of coastal resources and the hunting of small game alongside a mixed farming economy, as is known at the west coast settlements of the early Bronze Age at Rosinish, Benbecula and Killelan, Islay (Burgess 1980, 219) as well as at Ardnave, Islay (Ritchie and Welfare 1983). A small resident population might then have been increased at times of the year when seasonal resources were exploited. A similar possibility was suggested by Fleming (1971a) in discussion of the special burial areas which he distinguished in Dorset and Wiltshire. The possibility that the islands were used as burial places for people who lived elsewhere was discussed for Great Cumbrae by MacGown (1883), and might be supported from the impressive positions often chosen. This would also explain the presence of monuments on Little Cumbrae which is infertile, as well as the seeming importance of some of the island monuments, notably the 'Queen of the Inch' burial on Inchmarnock (IS 9) (Marshall 1963), and perhaps the large number of monuments located on Gigha. However we need not consider that these different uses of the islands must be exclusive.

Here we might cite the example of Bute, where, as was noted above, the density of monuments is striking. This could be linked to the intake of new farming land, for the island is noted for its fertility, and the majority of the Bronze Age burial monuments are located in the south of the island where good farming land exists today (2.3.3). On the other hand the Highland areas of the north and the uplands in the extreme south would have been suited to hunting or pastoral activity, and seasonal coastal resources will also have been available. Moreover the stone circles mentioned above (8.3.4:I:C) suggest that Bute may have had a measure of importance within the regional system. If we recall that the



distribution of Neolithic cairns on Bute includes a cluster of monuments in the north of the island (8.2.4:B), it might be suggested that the change in monument location within the island was not unlike the changes which seem to have taken place within the Firth of Clyde region as a whole. The distribution of the early Bronze Age burial monuments reflects more closely probable areas of settlement and agriculture than did the earlier monuments. A further factor which should not be neglected concerning Bute is the island's long-standing tradition of interest in archaeology, and the consistency of investigation and recording which were indicated in chapter 3. It may be that we have a more comprehensive record of early Bronze Age burial monuments on Bute than elsewhere in the area of study.

In several areas of the Firth of Clyde where early Bronze Age burial monuments are located it is likely that existing settlement continued. This may be suggested from the intensification of farming indicated from the available palaeobotanical evidence (6.3.2). For the west of Arran the environmental evidence is supported by the evidence of settlement discussed above (6.5.2). On Machrie Moor the reduced agricultural activity noted in the later Neolithic, which was mentioned above (8.3.4:I:B) was followed after c. 2000 bc by a renewal of clearance of forest for pastoral activity. Agricultural activity was intensified with periodic clearance of forest for both arable and pastoral farming during the period 1600-1100 bc. This culminated in the peak of activity reached in the later Bronze Age. Robinson suggested (1981, 136) that the period c. 1600-1100 bc was one of stable mixed farming. This is supported by the findings from the excavation of a hut circle at Tormore discussed above (6.5.2) (Barber 1982 and Barber forthcoming). Here small-scale



cultivation was indicated from ard marks which were associated with AOC Beaker sherds. Analysis of later soil samples suggested increased arable agriculture, and the use of larger field units (Robinson 1981, 129). Mercer's findings from survey of three areas in west Arran (1976) suggest that there may have been boundaries which separated the areas used for arable cultivation on the lower ground from upland areas, over c. 100', used for pasture land and grazing. As we have seen above (6.5.2) early Bronze Age burial cairns were closely integrated into the settled farmland in the vicinity of the stone circles, often being associated with stone clearance.

Clearance for cultivation and pastoral farming indicated from palaeobotanical evidence at Aros Moss, Kintyre (Nichols 1967) (6.3.2) would also be in keeping with the development of agriculture and settlement on the slopes around the Laggan, where we find not only Bronze Age burial monuments, but also standing stones and small finds which suggest early Bronze Age activity (8.3.4:II:A). The first evidence of forest clearance and cereal cultivation at a level sufficient to be recorded at Bloak Moss, Ayrshire (Turner 1970) (6.3.2) equally suggests an increase in farming activity, in keeping with the presence of early Bronze Age burial monuments, standing stones and the discovery of small finds. Taken with the evidence for Neolithic activity indicated by the polished stone axeheads (6.4), this is again indicative of continuity of settlement.

#### Upland Areas

In general the palaeobotanical evidence suggests clearance of the forest which would be more compatible with the combination of limited arable cultivation with a strong element of pastoral farming than

widespread cultivation. This is borne out by Turner's findings (1970, 6.3.2) that at Bloak Moss there was no evidence of major clearance and long-term irreversible change until c. ad 400-500. The similar picture suggested for mainland upland areas by the findings at Snibe Bog (Birks 1972) (6.3.2, 6.3.3) is in keeping with a continuation in the early Bronze Age of the pastoral activity suggested for the Neolithic, and does not suggest that Bronze Age cairns located in the uplands, in areas of present moorland and rough grazing, represent colonisation of the higher ground, for example by Childe's 'Urn folk'. In some respects a similarity might be suggested with the uplands of North Yorkshire. Barrett has recently reviewed the evidence there (1987b), and suggested that the barrows and other evidence of activity on these moors may represent seasonal movement into the hills as part of an agricultural cycle. This suggestion stemmed from the detailed environmental sequence which has recently become available (Spratt and Simmons 1976), which indicates that clearance for cultivation was less extensive and less permanent than was formerly supposed. The distribution of the barrows now seems less likely to be related to ongoing clearance of new areas for cultivation as soil deterioration set in, as was proposed by Fleming (1971b).

Nor need there be only one determining factor, for sometimes the situation seems more complex. Aspects of the artefact evidence discussed above (chapter 7) suggested movement over both short and longer distances. We can envisage that along with the opening up of new land and seasonal movement of flocks and herds there may have come an increased awareness of resources within the area of study, such as metal sources, clays for pottery and so forth. As farming was intensified in the main areas of settlement, and the increase in cereal cultivation brought new demands for

labour, more people are likely to have been taken up with maintaining daily routines fixed by the seasonal cycles of the farming year. Only some few may have journeyed at certain times to outlying islands, upland pastures, more distant resources or to visit neighbouring communities. It may be that rights to lands and resources in these places were established as burial monuments were constructed, and passed on through maintaining the tradition of burial in more distant parts.

Perhaps there may be a glimpse of this complexity in the sites in the Ayrshire hills around Muirkirk. They might be seen in terms of movement to summer pasture, as was suggested for the Neolithic in the hills to the south (8.2.4:D). It is interesting that the ring structures were originally considered to be the remains of hut circles, such as might have been used in connection with transhumance, and there remains the possibility of a link between houses of the living and houses of the dead. The clustering of monuments in the Muirkirk-Cumnock area of Ayrshire (fig. 8.10) may however suggest an importance beyond establishing rights to summer grazing. The finds, such as the metalwork discussed above (7.8.2) or the jet buttons found at Marshmark Hill (Munro 1902, 468), suggest the presence of people with the power to have access to specialised artefacts. It may be that the monuments reflect not only movement in connection with pastoral activity, but also claims to use the valley routes controlling access from the Firth of Clyde to areas inland and to the south and east, as well as into the hills themselves from which supplies of metal could be obtained.

#### D. Marks of Individual Power



Bronze Age cairns were found to be located more frequently than would be expected in prominent, commanding or conspicuous locations. Typical positions are hill tops, as at Knockjargon (AY 39) (Morrison 1978, 131) or Carwinning (AY 23) (Cowie 1979), in Ayrshire. Crests and ends of ridges, and hillocks in lower ground, such as are formed by igneous intrusions, were also chosen. These findings suggest the marking of the landscape with new symbols of authority and a reassertion of claims to lands and resources. The less obtrusive locations of the unmarked burial sites may reflect discovery patterns (8.4.3), but it will be remembered that cists were sometimes marked by standing stones (8.3.4:II:C) The insertion of cists into Neolithic cairns, as in the cist with a Food Vessel burial at Clachaig (ARN 16) (AR 41) (Henshall 1972, 107) or the Cinerary Urn burial (7.7.2) in the unusual two-tier cist at Glenvoidean (BUT 1) (BU 2) (Marshall and Taylor 1977) (reconstructed in the museum at Rothesay) may have been more widespread than records suggest (Henshall 1972, 58). Evidence may also have been lost of the superimposition of round cairns over Neolithic cairns, as has been found in recent excavations at Ardnacross 2 (ARG 35) (KT 69) (Scott 1972), Hilton Cairn, Bute (BU 43) (Marshall et al. 1976) and Glenvoidean. As Bradley has suggested (1985) such marks of individual power, like the deposition of Beaker pottery in chambered cairns (7.5.2), may be interpreted as an appeal to the past, association of the new with the old, or as a confrontation and challenge to the old order.

This aspect of the Bronze Age burial monuments may perhaps be most clearly observed in the addition of new and impressive marks on the monumental landscape of west Arran. The cairn at Blackwaterfoot (AR 32), with grave goods unique within the area of study, is often considered to

indicate a 'chiefly' presence. The cairn itself is reported to have been 'stupendous' and of 'vast height' (Pennant 1772, 208). The bronze dagger with gold pommel mount, discussed above (7.8.2, fig. 7.6) was found in a large cist, possibly at the centre of the cairn, and said to have been particularly well constructed, perhaps with dressed slabs (Bryce 1902, 117-9). Circles 2 and 4 on Machrie Moor (AR 20, 18) were marked by cist burials accompanied by distinctive Machrie Vase Food Vessels (7.6.2). Such findings, taken with the evidence for intensification of production mentioned above, may suggest that west Arran continued to be at the core of relationships within the Firth of Clyde. As the existing seat of power, it may have been seen as the place in which it was important to establish new codes of authority, while its position at the centre of exchange and interaction is likely to have brought it into contact with the new specialist networks.

The probability that burial in cairns or cists was restricted supports the suggestion that it was important members of communities whose remains were deposited in the monuments. Several aspects of social and economic development discussed above suggest the opportunities that there may have been for individuals to increase their power and command greater authority. One example may be the opportunities to establish claims to new land and resources. If these were added to existing rights, accumulation of land and resources may have become possible. Intensification of activity in areas previously settled suggests increased structuring of the landscape (cf. 8.2.4:D), possibly with greater fixity of boundaries. The increase in arable production may have entailed the organisation of more structured work routines and less mobility for some of the population. With pastoral farming continuing to be a strong element in



production, the apportioning of shares in grazing land may have required negotiation at a level above that of small communities of farmers. An emphasis on pastoral farming may also have encouraged enhancement of prestige and power through accumulating wealth in flocks and herds. Access to prestige metal and other artefacts is likely to have offered new areas for the exercise of control (chapter 7), enhancing the position of those involved in interaction and exchange. As the standing of communities came to depend more on the status of individuals, burial rites may have played a part in mitigating the threat to communities when death interrupted established relationships of affinity and obligation, requiring the renegotiation of social position and inheritance among the living.

#### E. Architectural Form and Burial Contexts

The uneven quality of the evidence contained in the archaeological record has already been pointed out (8.4.3). The discussion of architectural form, evidence of mortuary practices and deposition of grave goods is therefore based on a core of examples, although where possible similar or related sites are also mentioned.

The founding and development of a cairn is well illustrated from Balnabraid cairn, Kintyre (KT 57). In this cairn, parts, of which were destroyed through erosion, cist 6, which contained the step 6 Beaker discussed above, does not seem the most centrally placed (fig. 8.11). However Ritchie (1967) considered that it was probably the earliest deposit. He suggested that this cist and cist 4, probably of phase 2, both of which were dug into the natural gravel, may originally have been



covered by small cairns and are likely to predate construction of the cairn. The founding of a monument with a Beaker deposit is likely at a number of other sites within the area of study. For example at Courthill, Dalry (AY 25) (Cochran-Patrick 1874), although there is some uncertainty about the details of the site, it seems likely that the Beaker discussed above (7.5.2) came from a pit below a small cairn set within a secondary mound. Beaker pottery was present at the Muirkirk sites, Ayrshire, discussed above. These may have included a ring cairn, Wellwood House 1 (AY 96) and two enclosed cremation cemeteries, Wellwood House 2, 3 (AY 95, 94) (Ritchie 1970, Ritchie and MacLaren 1972). At both the latter sites Beaker sherds were found in the clay floor which seems to have formed the basal layer of the interior of the enclosure. At Wellwood House 2 these included sherds of about 14 incomplete Beakers, possibly deposited on more than one occasion, but including AOC and E wares. The step 7 Beaker, likely to post-date the step 1 and 2 sherds, was found in a large pit forming a deep grave placed at the centre of the enclosed area.

The Food Vessel found in cist 4 at Balnabraid cairn (Ritchie 1967) is one of the Machrie Vases (Davidson and Scott (1967), which, as we have seen (7.6.2), form a distinct group within the Firth of Clyde. The finds associated with the Machrie Vases were noted above (7.6.2). They are known from a variety of contexts, all compatible with an eclipse of Beakers and the appearance of a group of distinctive prestige pottery within the Food Vessel tradition (7.6.2). The Doonfoot vessel, which accompanied a burial placed on slab paving below the main cist, seems likely to have been the primary burial at the cemetery (AY 73) (Davidson and Scott 1967). The main cist contained a crouched inhumation burial and an undecorated Food Vessel or Food Vessel/Cinerary Urn, while a

Cordoned Urn was found in a small detached cist alongside the main cist. The contexts of other Machrie Vases - within the chamber of the Neolithic cairn at Brackley, Kintyre (ARG 28) (KT 76) (Scott 1956, 1969b, 237) (8.2.4:H) and in the cists at the centre of two of the stone circles on Machrie Moor (Bryce 1862) - are suggestive of the deliberate marking of earlier monuments discussed above. The cist burial at Mountstuart, Bute (BU 34) (Bryce 1904, 63-69) (fig. 8.13), on the other hand, points to the mainstream of early Bronze Age burial traditions in the area of study.

In later developments at Balnabraid cairn (KT 57) (fig. 8.13), again following Ritchie's interpretation (1967), cists were built on the ground level, requiring the support of cairn material. No grave goods are known from cists 2, 3 or 7, which were assigned to phase 3. Cist 2, the most central to the present cairn, contained a cremation burial. Cists 9 and 12, which contained ribbed or tripartite bowl Food Vessels (7.6.2), were seen to represent phase 4. In cist 9, outwith the kerb of the cairn, a cremation burial had been deposited before the inhumation burial which accompanied the Food Vessel. The Cinerary Urn deposits of the much disturbed cists 10 and 11 near the margin of the cairn (phase 5) were thought to post-date the Food Vessel burials.

The large kerbed cairn recently excavated at Kilpatrick, west Arran (AR 38) (fig. 8.11) (Barber 1980, Barber 1982) also seems to have had a complex history of development (Barber forthcoming and pers. comm.). The central cist within the inner circle of boulders, had been inserted into an earlier pit. This cist, disturbed in antiquity, had contained Food Vessel burials. Two other cists were located in the outer part of the cairn. Both cremation and inhumation burials were attested.

Similar settings of more than one cist under round cairns are known



within the area of study. Ossian's Mound, Clachaig, Arran (AR 42), for example, contained a central cist and a smaller cist near the margin of the cairn (Bryce 1910, 101). Cists and a semi-circular setting of stones were found in the cairn surrounded by an embanked stone circle at Beoch, Dalmellington, Ayrshire (AY 100) (McLeod 1938). The cairn of Carn Ban, Gigha (IS 10) (RCAHMS 1971, 40-41) seems to have been not unlike that at Balnabraid (KT 57). Four cists were located near the centre, and one other cist is known on the periphery. Other cists may have existed in this much robbed cairn. Several cists are also reported to have existed in a cairn which once stood at Trench Point, Campbeltown (KT 63) (RCAHMS 1971, 45). Here as at Ascog Bay, Cowal (CO 12) (Scott 1950) unmarked cists are likely to have been built in the vicinity of the cairn. This association of cairns and cists is often suggested from early reports, and has been noted in the data file.

Comparison of these monuments with the Neolithic cairns described above suggests a number of differences in architectural form and ritual practice. As we have seen (8.2.4:C) the deposition of human remains in the Neolithic cairns is likely to have been occasional and in the context of ancestral rites. The early Bronze age burial monuments on the other hand were founded specifically for burial. The first burial, usually placed in a closed cist or pit, often seems to have formed a central focus around which the monument was demarcated. Sometimes this burial was accompanied by prestigious pottery. These closed burial contexts are distinct from the chambers of the Neolithic cairns which remained open and accessible for a long period of time. Unless this grave was broken open, as seems to have happened at Kilpatrick (AR 38), development of the monuments was through the addition of further closed burial structures,



again contrasting with the additional depositional contexts provided in the segmented chambers of the 'Clyde' cairns (8.2.4:F). At Balnabraid this involved upward progression as cists were built overground and cairn material piled up around them, sealing off the earlier burials. This was followed by the placing of further burials in peripheral positions nearer, or at, the edge of the cairn, again avoiding the focal point within the centre of the monument. This suggests major architectural differences if, as was discussed (8.2.4:F) the burial chambers of the Neolithic cairns remained accessible through the roof space. While Bronze Age cairns were often likely to have become imposing monuments, they remained dedicated to burial, and lack the ongoing preoccupation with monumentality and provision for ceremony which characterised the development of the Neolithic cairns, facades and forecourts (8.2.4:F).

The sequence of construction of groupings of unmarked cists is less easy to establish. The only possible parallel for the site at Doonfoot (AY 73) is the poorly recorded cist site at Windyhall, Bute (BU 37) (Steuart 1872). However, the occurrence of cists in pairs, as at Auchenharvie, Stevenston, Ayrshire (AY 42) (Morrison 1971) (fig. 8.13), or Kintyre Nurseries, Campbeltown (KT 61) (Peltenburg 1979), in groups of three, as at North Park, Inchmarnock (IS 9) (Marshall 1963), Little Kilmory, (BU 21) (Marshall and Bryce 1935) and Auchantirie (BU 16) (Bryce 1904) on Bute or Kilmaho (RCAHMS 1971, 50-1) in Kintyre (KT 40) (plate 20), or in a group of five as at Glenreadell Mains, Kintyre (KT 87) (MacLaren, 1969; RCAHMS 1971, 48-50) suggests developments comparable to that of many cairns.

These findings suggest that early Bronze Age burial monuments were initiated and developed in immediate response to the deaths of

individuals as they happened to occur. The deposition of human remains in the chambers of the Neolithic cairns was in contrast occasional, and may have been governed by the cycles of seasonal routines. This would be in keeping with the closer relationship of the early Bronze Age monuments to areas of settlement which is suggested from consideration of their frequency, distribution and location.

Both primary burial (inhumation) and secondary burial (cremation) figure in early Bronze Age funerary traditions, often, as at Balnabraid (KT 57), within the same monument, and sometimes even the same cist. This is illustrated within the area of study at Glenreasdell Mains, cist 2 (KT 87) (MacLaren 1969) or Kilmaho, cist 2 (KT 40) (RCAHMS 1971, 50-1). Such complex contexts may reflect decisions and choices made at the point when death intervened. These could be influenced by many factors, social and circumstantial, including the place and time of death. In cremation, while the monuments remained the places of burial, the point of transition to death, at the place of cremation, may have been located elsewhere. This may perhaps be reflected in the occurrence of Cinerary Urn burials in subsidiary positions as at Balnabraid (KT 57) or Tomont End Cairn, Great Cumrae (IS 5) (MacGown 1883). The occurrence of urn burials on the fringes of monuments is also in keeping with the trend through time noted above (7.7.1, 8.4.1) to a greater emphasis on cremation burial.

Another significant contrast between Neolithic cairns and burial monuments of the early Bronze Age lies in the use of artefacts as grave goods. As we have seen (7.2.2, 7.2.3) the pottery and other artefacts which are typical finds from the Neolithic cairns are, with only a few exceptions, of a kind which do not suggest association with particular individuals. The contrast with the deposition of prestige



artefacts in the early Bronze Age burial monuments is very striking, and is illustrated from the deposition of Beaker, Food Vessel and Cinerary Urn pottery as well as the range of objects crafted in rare materials such as jet, copper or gold which were described in chapter 7. The access to specialised exchange networks and command of particular resources and skills which is implied is in keeping with the rise of individuals to elite positions and the control of wealth and resources which was discussed above. The placing of prestige items in the closed burial structures is to remove them from gift exchange networks, and thus constitutes the consumption of wealth comparable to the deposition of metal artefacts in hoards (7.8.1). It may also mark the ending of a particular relationship of affinity and obligation which the artefacts represent, creating the need for renegotiation.

The difference in the use of artefacts in Neolithic cairns and in early Bronze Age burial monuments goes beyond the distinction between undistinguished items and prestige goods. The careful attention to detail in choice of grave goods and decisions about their arrangement has impressed and touched investigators since early discoveries. An example is the cist at Mount Stuart, Bute (BU 34) mentioned above, which contained the skeleton of a young woman accompanied by a complete jet necklace, a Machrie Vase Food Vessel and what may have been a bronze ring, excavated by Bryce (1904) (fig. 8.13). The 'Queen of the Inch' burial (IS 9) found on Inchmarnock (Marshall 1963) has already been mentioned (7.6.2). Here the cist, which contained the female inhumation accompanied by a plain jet necklace and a flint knife, was carefully built and the joints luted with clay. The burial was sealed under a rebated cist cover of the form found in the linear cemetery at Kilmartin, Argyll.



Under the massive cist slab of cist 3 at Kilmaho, Kintyre (KT 40) (RCAHMS 1971, 50-51), the crouched skeleton of a middle-aged adult was placed with an upright Food Vessel at his back. By his hands were laid two flint knives or scrapers and a small riveted bronze knife. On top of the bronze knife were placed a bronze awl and several extraneous teeth (plates 21, 22). That children were sometimes given cist burial is indicated from the group of three cists, each of which contained the burial of a child at Little Kilmory, Bute (BU 21) (Marshall and Bryce (1935).

Within the urn cemetery at Misk Knowes, Ardeer Sands, Ayrshire (AY 45) (Mann 1906), discussed above (7.7.2), one Cinerary Urn contained the remains, probably of a young woman, accompanied by white quartz pebbles, traces of gold and vitreous beads. Here some urns were sealed with unbaked clay covers, in one of which were embedded quartz pebbles - several white and one red. The two Cinerary Urn burials found at Coalpots Road, Girvan, Ayrshire (AY 105) (MacKie 1966) contained 'clean' cremations, involving careful separation of the burnt bones from the ashes. The larger urn contained a probable 'mother and child' burial - the remains of a female of 20-22 years and those of an infant in about the seventh month of intra-uterine life, along with two flint scrapers. The other urn contained the remains of an adolescent of 14-16 years. The debris from the funeral pyres may have been deposited in the pits found in the vicinity. At Balloch Hill, Kintyre (KT 48) (Peltenburg 1982) a cleft in the rocks was carefully prepared before two roughly built Bucket Urns containing cremations, some flints and a pendant object were placed in upright positions and covered with unfired clay covers. The urns may have been brought empty to the site, possibly on a wooden tray of which remnants remained, although the presence of pyre material suggests that

cremation may have taken place not far away. One urn contained a well made and decorated Pygmy Vessel in which were placed the remains of a child and a copper awl, an assemblage with similarities to that found at Gennoch, Straiton, Ayrshire (AY 102) (Macdonald 1878, 43-4).

#### F. Résumé

Study of the frequency, distribution and location of the early Bronze Age burial monuments suggests that the main weight of the distribution was in areas of contemporary settlement. Alongside this pattern some monuments in more peripheral locations, such as the small islands or upland areas, may rehearse something of the peripheral location of the Neolithic cairns. The very close integration of the Bronze Age burial monuments with settlement and farmland which is evident in west Arran suggests that the monuments were very much a part of the landscape in which people lived and worked.

This is borne out by aspects of the architectural form and function of the monuments. These include the dedication of the monuments solely to burial, the direct and immediate response to the deaths of a series of individuals and the active participation and involvement of the living in choices and decisions concerning the treatment of individuals at death. The intricate symbolism which the careful arrangement of burials and grave goods suggests may have mediated the threat which the intervention of death caused to the stability of communities as they were faced with issues of inheritance of rights to lands and resources, and the need to renew relationships of affinity and obligation. The symbols may thus have carried not only feelings of grief, but the sense of loss and the

realisation of the need to search for a new order and a way forward experienced by communities as they came to terms with the reality and finality of the death of an individual from their ranks.



## 8.5 Synthesis: the Monument Record through Time

### 8.5.1 Introduction

In sections 8.2, 8.3 and 8.4 above there has been discussion in detail of the results of analyses of the frequency and spatial distribution as well as of the relationship to a range of locational factors of six type monuments of the Neolithic and early Bronze Age in the Firth of Clyde. Their architectural forms and functions have also been considered, and the evidence of the monuments placed, as far as possible, in the context of the life and work of communities in the area of study as understood from cultural and environmental evidence.

The type monuments have been seen to represent a series of architectural forms and associated depositional structures, and it has become evident that change in monument form is likely to indicate changes in ritual practices, the different structural forms being dedicated to activities of different kinds. In addition we have observed, from shifts in patterns of spatial distribution and changes in frequency of monument, as well as in relationship to locational factors, that these different ritual activities took place at different points within the landscape of the study area. This has suggested changes through time in the ways in which ritual activities were related to the daily routines and annual cycles of everyday life, and variation in their location in the landscape in relation to the areas of settlement of communities within the Firth of Clyde.

It has been observed that during the Mesolithic period a complex system of movement from location to location on a seasonal basis is likely

to have been practised. During the Neolithic period it appears that a spatial division of activities emerges, whereby settlement and agricultural activities are not necessarily coincident with the ritual and burial activities which took place at the chambered cairns. The transition to the early Bronze Age is marked by a new spatial division of activities in which ceremonial activity is restricted to certain locations, while the location of burial monuments is much more closely related to settlement patterns.

In this section it is intended to focus on these changes, and consider processes at work in society, and changes in social relations through time which can be suggested from the research. It will be recalled that a particular objective discussed in chapter 1, and one which distinguishes this study from earlier work, is to move beyond the confines of period boundaries and set the findings in historical perspective. To achieve this a broad approach is adopted, and a synthesis presented of the essential findings concerning the development and structuring of the monument record through time.

#### 8.5.2 The Monument Record through Time

Long term Mesolithic activity, perhaps with a measure of residential stability, is likely to have been based at major resource spaces which existed on the Ayrshire coast during the period of marine transgression and regression. The regular and informed use of localised resources, for example on Arran, together with the evidence that Mesolithic activity seems to have been less intensive inland and on the islands and outlying peninsulas of the study area, is in keeping with the exploitation of a

range of more specialised land and marine resources on a seasonal basis. Contact and interaction with communities beyond the Firth of Clyde, indicated from movement of pitchstone, is likely to have been fostered by coastal navigation, but there may also have been long distance contacts if deep sea fishing took place as part of the seasonal cycle. The adoption of agriculture may have been encouraged with the loss of some coastal resources following the onset of land recovery during the fourth millennium bc (cf. Zvelebil 1986).

Continuities in the evidence of resource exploitation however suggest that farming, whether brought by newcomers or adopted by indigenous communities, is likely to have been introduced into a wide-ranging hunter-gatherer context. It is not surprising therefore that spatial organisation in the Neolithic should be closely influenced by the earlier structure of Mesolithic exploitation, or that this is observed in the spatial distribution of the chambered cairns. While individual hunter-gatherer groups may have had an accepted home-ground, access to more widespread lands and resources is likely to have remained free and flexible, and social arrangements and leadership fluid. With the introduction of farming, settlement is likely to have been extended into the peripheral areas of traditional seasonal exploitation on the islands and peninsulas. Changes which characterise the period of forager-farmer interaction, such as reduction in mobility, clearer definition of land use and work roles, and reorganisation of social arrangements for access to lithic and other resources, result in an increase in social complexity. Communities are likely to have become closer-knit and interdependent, with an increase both in attachment to lands and resources and dependence on participation in alliances and networks of exchange - all factors which



may encourage the emergence of social elites, and thus, through time the development of inequalities within society. The building of the monuments may thus be seen to coincide with a formative stage in social development (cf. Cherry 1978), serving to bring together different elements in society within a coherent organisational structure.

Neolithic cairns are likely to have been established within the fourth millennium bc, and represent the emergence of a record of mortuary practices within the area of study - the provision of simple burial chambers surrounded by minimal cairns (fig.8.2). These were found to be positioned in locations which were prominent and visible, often at points which offered separation from as well as prospect over the surrounding landscape. The evidence supports the notion that, through continuing use, these monuments may have become established points of reference in the landscape, and, through their association with the dead, the foci of ancestral rites. It seems likely that the cairns appeared during the period in which farming was being gradually introduced alongside existing Mesolithic traditions, and they are frequently located in areas of Mesolithic exploitation. This continuity of land use, along with the ongoing traditions of resource exploitation, emphasises that historical context is critical in understanding the processes of change.

An assumption, generally accepted in earlier work and supported by the view that the cairns represented communal tombs, has been that the distribution of the monuments (fig. 8.1) reflects the extent of Neolithic farming settlement or farming territories. This assumption is questioned as a result of the study of the distribution of polished stone axeheads (fig. 6.2), which indicates Neolithic activity in the Ayrshire-Renfrewshire mainland, the sub-region of the study area in which

Neolithic cairns are largely absent. This activity has remained difficult to detect from the pollen analytical studies currently available. These findings are supported from very recent work in Galloway to the south of the area of study. Here Ritchie (1987) has illustrated a spatial division in the occurrence of chambered cairns and stone axeheads in which chambered cairns are located mainly in the upper reaches of the valleys, while stone axeheads have been found mainly in the lowland areas.

We must conclude that, although Neolithic activity was widespread in the area of study, monuments are a feature not of the Ayrshire mainland, whose coastal exploitation was focal to Mesolithic activity, but rather of the peripheral areas at the margins of Mesolithic exploitation - the islands and outlying peninsulas or inland areas (fig. 6.1). The location of cairns within these areas may sometimes suggest proximity to resources such as lithics or agricultural land. However this relationship is more complex than the link with the control of critical resources proposed by Chapman (1981). The relationship of Neolithic cairns to present agricultural land highlights the paucity of cairns in the Ayrshire-Renfrewshire sub-region, which has the largest percentage of present agricultural land. In the island and peninsula zone, where the association of cairns with pockets of present agricultural land and on particular soils is attested, we can see that these were locations with a tradition of Mesolithic exploitation in which a settled farming landscape may have been developing. A notable example is Machrie Moor. In a similar way it seems likely that past practices contributed to the location of cairns in small resource areas offering limited agricultural potential along with the continuation of hunting, gathering and fishing, in the vicinity of traditional lithic sources or in upland areas used in

the past for hunting where areas of pasture had developed.

The distribution and frequency of Neolithic cairns in the area of study do not support the extension to the rest of the Firth of Clyde region of the division of the land into hypothetical cairn territories which Renfrew proposed (1973a, 1976) for the island of Arran. Even on Arran the definition of such territories is hard to maintain. Thus study at regional level does not confirm Renfrew's general conclusion (1976) that the appearance of megalithic monuments along the Atlantic seaboard of Europe represents an expression of territorial behaviour in response to population stress caused by the expansion of farming into areas occupied by Mesolithic coastal communities. Arran is not a microcosm of monumentality on the Atlantic seaboard, as Renfrew (1976) seems to imply. Within the Firth of Clyde region the concentration of cairns on Arran is marked. From a historical perspective this concentration, coupled with a strong emphasis on segmentation, is in keeping with its occupancy within a particular range of traditional seasonal and lithic resources, with its visual dominance within the region and with its central position for maritime interaction and exchange.

A further, related finding concerns the relationship of the distribution and location of the monuments to their role in Neolithic society. A function as foci of ancestral rites is suggested by structural features as well as by the evidence of secondary burial (sensu Huntington and Metcalf 1979, 13), indicating conversely the absence of a general record of Neolithic burial. The distribution and location of the chambered cairns suggests that the deposition and veneration of ancestral remains took place during traditional seasonal routines of activity. The journey to the places of the ancestors may then mediate between life and



death by bringing the linear progression of human life within the cyclical patterns of the natural world. Their location may also reflect contradictions in the relationship of the living with the dead. The ancestors were kin, but they were also dead. For the living they may have represented on the one hand fatherhood and authority, well known, recognised and accepted, and on the other hand uncertainty and fear of the unfamiliar, the unknown and the uncanny. Their monuments are thus placed at the boundaries of familiar territory, in remoter regions and those which, visited more rarely, retained an aura of the untamed wilderness.

The elaboration of these cairns (figs. 8.3. 8.4) enhanced their monumental aspects by enlargement, in particular by the lengthening of the cairn. This is likely to have increased their attention-focussing function (cf. Fleming 1973) as stable reference points in the changing landscape, which may have further emphasised the power of the past behind the authority of living leaders. That dominant elites came to be accepted as intermediaries between the living and the dead is suggested by structural modifications designed to restrict access to the burial chamber and to shift the focus of the monument to specific forecourt areas for ritual and ceremony, screened off from the chamber and the ancestral remains. This transformation in the provision for ritual in the architecture of the monuments through the long period of their use is perhaps the clearest indication from the archaeological evidence under study of the sensitivity of ritual activity to changes in society and the ways in which, as rituals are repeated, they may incorporate shifts in the common sense reality of everyday life which society constructs.

A variable spectrum of aggrandisement of the monuments is suggested across the area of study, reaching a peak on Arran in the clustering of

elaborate cairns and in the deposition of complex artefacts. Emulation may have played a part, as Arran developed its position as a central reference point and locus of interaction within the Firth of Clyde. Aspects of the elaboration of the cairns suggest the exchange of ideas, information and technical expertise with a wider 'megalithic' world, which may have been fostered by the restricted, specialised networks of exchange of the later Neolithic.

After the long period in which they had continued to be the focus of ancestral rites, the end of use of the Neolithic cairns was marked by changes which were abrupt and final in comparison with the more measured modifications which had already taken place. The filling of the chambers and the blocking of the forecourts is likely to have begun in the second half of the third millennium bc, and constitutes the ending of the deposition of ancestral remains in the chambers and the closing of forecourt areas for ritual and ceremony. The rejection of the ancestor-focussed world view which this suggests may however be seen as the culmination of the distancing of the ancestors and increasing the emphasis on ritual and ceremony which involved intermediaries between the living and the dead, processes which were suggested from the earlier structural modifications.

The evidence of filling and blocking of the cairns suggests an increase in the power of elites, perhaps to the point where inequalities began to affect social cohesion. Such a development is in keeping with continuation and intensification of the social trends initiated with the introduction of farming during the long period of stable agriculture which, as indicated on Machrie Moor, is likely to have followed the elm decline. As some elites achieved greater dominance than others, and



commanded greater authority, the inconsistencies with the undifferentiated groups for whom the Neolithic cairns had been conceived may have reached a point where contradictions could no longer be resolved by appeal to the ancestors, and power had to be validated through a higher authority.

As we have seen, burial and ceremonial activities, which had been located within the same monuments during the period of use of the chambered cairns, were divided in the monument traditions which emerged in the later Neolithic and early Bronze Age. The new and separate provisions for ceremonial and burial activities now form the main areas of investigation, so that there are two main strands of evidence. On the one hand there is the appearance of large ceremonial monuments, the stone circles, which represent a transformation in the scale of provision for ceremony from the forecourts of the chambered cairns. On the other hand there is the emergence of a tradition of single burial, markedly different from the deposition of ancestral remains, which becomes prominent in the early Bronze Age with the deposition of artefacts as grave goods. Standing stones, which seem to have had a particular floruit in the Bronze Age, may be associated with both these monument traditions, while cup-marked rocks seem to represent ritual activity of a different but enigmatic kind which may have been conducted mainly in locations marginal to the main foci of other activities.

A key aspect of the appearance of stone circles is their restricted distribution (fig. 8.5), and their particular appearance at certain points within the landscape, as seen in the notable concentration which forms the ceremonial complex on Machrie Moor. Again this is best observed from the regional distribution which illustrates the contrasts between Arran and the rest of the study area - the absence of circles of free-standing



megaliths in Kintyre, Cowal and the small islands and their sporadic occurrence in the Ayrshire-Renfrewshire sub-region and on Bute.

However, it is only within an historical context that we can understand that the emergence of the localised area of Machrie Moor as an important focus at a regional level is related to the development of Arran throughout the Mesolithic and Neolithic. By the later Neolithic Arran was already a major reference point for the region, and a centre of social interaction and exchange. It was thus in a strong position to become the locus for new focal monuments within the region and likely to have had a role in fostering regional identity within the Firth of Clyde (cf. Cherry 1978), at a time when regional integration was taking place throughout the British Isles. Moreover it was ideally positioned to penetrate the increasingly specialised and wide-ranging networks of exchange and interaction developing at that time. At a more localised level a historical perspective allows us to observe that the stone circles were established in a part of Arran which was already recognised as a 'place for monuments', and which people had been accustomed to visiting within seasonal cycles whose histories extended back to the Mesolithic.

The analysis of locational factors contributes to our understanding of the choice of Machrie Moor as the place for an important complex of stone circles, in that it offered particular localised attributes important in their location. Moreover these were complemented by the grandeur of a wider mountain setting. The possibility that the stone circles were positioned with a view to observing the midsummer sunrise (Barnatt and Pierpoint 1983) had possible practical applications, for example facilitating the fixing of the time for periodic gatherings held in connection with farming routines.

However we must recall that the design of the complex of stone circles on Machrie Moor (fig. 8.6), suggests that they may have been the focus of intricate and complex ritual or ceremonial activities. In detail those remain unknown, but aspects of architectural form, as well as the location in relation to astronomical features, indicate rituals connected with the mediation of natural forces. This would be in keeping with making claims on powers higher than those of the ancestors. The rise of ritual authority and the extension of its sphere of influence to the region may have been encouraged by the realisation among farming communities of their ultimate dependence on the continuity of the cycles and rhythms of the natural world.

An essential characteristic of the findings from analysis concerning the burial monuments of the early Bronze Age - the second main strand of monument evidence mentioned above - is the ways in which they contrast with both the chambered cairns of the Neolithic and the stone circles. For example the number of early Bronze Age burial monuments is markedly greater than the numbers of either Neolithic cairns or stone circles. Their distribution (figs. 8.10, 8.12) highlights further contrasts, also observed only from study at regional level. As has been discussed Neolithic cairns appeared as occasional foci in the landscape, and stone circles were restricted to certain particular locations. Both are likely to have been visited periodically in the course of cycles of seasonal routines. The early Bronze Age burial monuments on the other hand were widely distributed throughout the area of study. Within this general pattern significant differences in detail occur. For example a substantial number of burials lie in the Ayrshire-Refrewshire sub-region, where



Neolithic cairns were largely absent and stone circles few. Their distribution also extends to the small islands, with a high density of monuments in this sub-region which lacked both Neolithic cairns and stone circles.

The systematic study of the formation of the archaeological record has been an important element of the approach to this research, and is relevant to the analysis of the distribution and the relationship to certain location factors of all the monument groups. In the case of the early Bronze Age burial monuments its relevance is in suggesting areas of discovery and survival (sensu Stevenson 1975). Here, although there may be biases in the present archaeological record, the association of the Bronze Age burial monuments with lowland coastal areas of the Firth of Clyde occupied by raised beach deposits suggests not only continuity but intensification of activity in these areas often used for agriculture or occupied by towns at the present time. Moreover there is an extension of activity in very low-lying areas located very near the present coast line.

A significant conclusion, reached through relating these findings to environmental evidence, was that the distribution of Bronze Age burial monuments is likely to reflect areas of settlement much more closely than Neolithic cairns or stone circles. This is illustrated in previously settled areas, examples being west Arran, the Ayrshire mainland or the slopes surrounding the Laggan area of Kintyre, in all of which palaeobotanical evidence suggests intensification of agricultural activity in the early Bronze Age. In west Arran the association with settlement can be documented, and it was supported for both Ayrshire and the Laggan by the presence of standing stones (fig. 8.7) and the recovery of small finds. The uptake of new coastal land for agriculture and settlement is



found to be in keeping with the probability that by the early Bronze Age areas of the lowest raised beach (the so-called 25' raised beach) had become available and suitable for agriculture through land recovery.

The accumulation of wealth through acquisition of rights to land and resources as new areas were opened up on the small islands, or in upland areas was one of the social changes which may have taken place at this time. This and other changes, such as a reduction in mobility as arable production increased and the possibility that the strong pastoral element in the economy allowed enhancement of prestige through increased wealth in flocks and herds, suggest a rise in the power of individuals. This is illustrated in the restricted access to prestige artefacts of the early Bronze Age and the networks of exchange through which they were circulated. With developments of this kind it seems likely that inheritance of rights to lands and resources will have become an important issue.

The prominent locations often chosen for Bronze Age cairns, and the marking of cists with standing stones or earlier monuments with Bronze Age burials, suggests symbols of new authority in the landscape. The placing of distinctive burials within the stone circles on Machrie Moor, taken together with the building of the impressive cairn at Blackwaterfoot, with its unique burial assemblage, may have established codes of individual authority in this 'core area', while at the same time maintaining its established position as both a focus of power within the Firth of Clyde region and a centre of interaction through which to penetrate specialist networks of exchange.

Another significant finding is that the contrast between the burial monuments of the early Bronze Age and the chambered cairns of the

Neolithic is not confined to numbers of monuments or their patterns of distribution and location. Study of the architecture and depositional contexts of the Bronze Age cairns and unmarked burial monuments (figs. 8.11, 8.13) highlights differences in form and function from the Neolithic cairns. This confirms the importance of continuing attention to the architecture of the monuments, which has in the past received less attention than study of early Bronze Age artefacts. From the evidence of a number of examples, it was found that early Bronze Age burial monuments were founded and maintained specifically for burial and burial rituals, and lacked the provision for ceremony of the Neolithic cairns. A particular monument may contain a series of carefully arranged separate burial contexts, each different and distinct. These findings seem to point to an immediate and direct response by communities to the deaths of individuals as they happened to occur. The nature of the burial contexts also suggests the involvement and participation of the living in the treatment of the dead. Examination of a number of examples suggests careful attention to detail in arrangement of human remains and artefacts. Although we cannot understand the symbolism, we can perhaps sense something of the webs of significance which may have mediated the transition from life to death, mitigating its impact on society and allowing the renegotiation of social ties and the restoration of rights to lands and resources.

These salient features of the early Bronze Age burial monuments support the close relationship to daily life that is suggested from the number of the monuments, their wide distribution and their location in areas of settlement.

Perhaps the most significant finding to emerge from this synthesis is

that understanding the evidence depends on placing it within the space-time continuum of a regional and historical study. Only then is it possible to appreciate the integrity of the region which underlies the changes in interaction and interdependence or in relationships among the communities within the Firth of Clyde during the period of this study.

At the chambered cairns, remote in space, discourse between the dead and the living lingered on, and the debt to the past and the ancestors was never severed. With the filling and blocking of the cairns this communication with authority was, as it were, translated to the stone circles and subsumed under ritual authority, located at specific points in the landscape. In the burial monuments of the early Bronze Age, located within the landscape of everyday life, the response to the deaths of individuals was completed by structuring of the monument which ended communication with the living. However the monument, visible and ever present, confronted communities cognisant of secular authority with the objective reality of death and the threat to society which it represented.



## CHAPTER 9

### CONCLUSIONS

#### 9.1 Introduction

The specific results of the research have been presented in chapter 8, and the essential findings have been drawn together in the synthesis with which that chapter was concluded (8.5). This chapter is concerned with the overall conclusions reached and the contribution of this thesis to the understanding of the Neolithic and early Bronze Age periods in the Firth of Clyde region of south-west Scotland. The methods developed and approaches used (1.3) are assessed. New interpretations which these methods and approaches permitted are summarised, and there is a review of the extent to which it has been possible to move beyond the cataloguing and ordering of archaeological data to understanding processes at work in society and changes in social relations through time.

#### 9.2 Data and Methods

##### 9.2.1 Data

A primary aim of the research (1.3) was to integrate the full range of relevant evidence which is available. The data thus includes information from standard and published data sources as discussed in the Preface, in chapter 4 and in the Notes to Appendices 1 and 2. In addition there is extensive original map evidence and data resulting from

observations made in the field.

### 9.2.2. Data Handling

One requirement of the research was to bring together the evidence of sites of the Neolithic and early Bronze Age contained in the archaeological record for the area of study with a range of locational factors gathered from research and from observation in the field. This was achieved in the data file from which the Catalogue of Sites (Appendix 1) was prepared (chapter 4).. In order to handle such a diversity of information and variety of both categorical and continuous data a computerised data handling procedure was necessary. A set of programmes was designed specifically to meet these needs as described in chapter 4. Existing packages rarely combine the facilities required in the present analysis (Doherty and Gibson 1983). For example text-sorting programmes designed for catalogue production do not permit statistical analysis or the output of data in a format compatible with other statistical programmes. By contrast packages designed for basic statistical analysis do not include provision for the output of printed text in a format appropriate for an archaeological corpus. The dual functions of data manipulation for statistical analysis and the production of catalogue-style text ordered by user-selected criteria were therefore best achieved by custom-designed programmes. In addition, as the spatial analysis is a very important part of the present study, the ability to map data directly from the data file was a considerable advantage. This facility was included in the set of programmes prepared. The multi-functional nature of this set of programmes facilitated a smooth,

efficient data analysis and required no re-ordering or re-entering of data between steps in the analysis.

In addition to the quantitative analysis reviews were made of certain categories of cultural evidence and of environmental studies relevant to the research (chapter 6). The review of Mesolithic activity proved critical to the historical perspective, while the catalogue of polished stone axeheads (Appendix 2) was the basis for a study of their spatial distribution crucial to interpretation of the extent of Neolithic activity within the area of study. The review and assessment of palaeobotanical evidence was also of the utmost importance in offering the possibility of setting the archaeological evidence in the perspective of the settlement and economy of the region, especially in view of the limited evidence of settlement. Here there was the opportunity to relate the results of some very recent palaeobotanical research to the evidence contained in the archaeological record.

### 9.2.3 Quantitative Analysis.

It was suggested (1.3) that quantitative analysis of the frequency, spatial distribution and relationship to location factors of the six type monuments would provide a surer basis for interpretation of their occurrence in the area of study than purely qualitative assessment. As a result of the analysis (chapter 5) important differences were distinguished in the frequency and distribution of the various monuments. Moreover it was found that there were differences from a uniform distribution in relation to all the location factors investigated. A further significant feature of the analysis was the differences which were



demonstrated for the various sub-regions of which the study area is composed. The majority of these findings would not have been revealed from qualitative assessment, and their relevance has been demonstrated both to consideration of changing patterns and relationships within the area of study through time (8.5) and to understanding of the archaeological record. The use of a consistent analytical framework throughout has also permitted a systematic approach to the evidence. The importance of this was increased by differences in approach which had become embedded in previous work. An example is the contrast between interest in the distribution of monuments in studies of the Neolithic and artefact-focussed studies of the early Bronze Age (1.2.5).

### 9.3 Approaches to Interpretation

#### 9.3.1 The Formation of the Archaeological Record

With a wide range of evidence of different kinds under consideration, and an area of study with much topographical diversity and concomitant variations in recent social and economic development, it was expected that study of the formation of the archaeological record would be an important element in interpretation of the evidence (1.3). The systematic study undertaken (chapter 3) afforded numerous insights into the spatial distributions of monuments of all the groups under study, as well as their relationship to certain location factors, notably present land use. A major dichotomy became apparent from research into social and economic development between the Ayrshire-Renfrewshire mainland and the islands and

outlying peninsulas of the study area. This distinction was found to be reflected in differences in discovery and survival of archaeological remains. An important realisation, which stemmed from comparison of the distribution of polished stone axeheads with the occurrence of Neolithic cairns, was that the contrast between discovery and recording of artefacts, so evident in the archaeological record of Ayrshire, and investigation of monuments in the island and peninsula zone, is likely to have reflected a real difference in the level of monumentality in the two zones of the study area in the Neolithic. More subtle distinctions within the region were also revealed. While interesting in themselves, these also offered valuable insights into factors influencing the present archaeological record. Examples are the reputation which Arran acquired from the time of the earliest records as a 'place for monuments', or the sustained interest in recording and investigation of archaeological remains on Bute. A further important realisation clarified through this study was the uneven quality of an archaeological record which has resulted in general from chance discovery rather than systematic survey, and the limitations which this poses for research.

### 9.3.2 The Historical Perspective

Perhaps the most important distinguishing feature of this research has been the maintenance of an approach which included a historical perspective (1.3). This has allowed investigation of the degree to which the legacy of the past may form the basis for future developments. Of maximum importance here has been the new understanding achieved into the ways in which practices and traditions particular to the region in the

Mesolithic remained an influence in the distribution and location of the chambered cairns of the Neolithic. Here it has been possible to move from appreciation of continuities from Mesolithic to Neolithic to their interpretation, and this part of the research illustrates most clearly the importance of considering the results of quantitative analysis within the particular historical conditions of the area under study. Legacies from the past are not revealed in more traditional period-based studies.

Another insight which stems from the historical perspective has been an appreciation of variations in the pace of change and the conditions from which transformations in provision for ritual and ceremony or mortuary practices may take place. An example here is the blocking and filling of the chambered cairns in the later Neolithic which was found to mark a deliberate break with the past and a point of transition to the new. In the past change had been within continuity of world view, giving the appearance of permanence and timelessness despite the shifting focus of the monuments from ancestors to leading figures among the living. In this context it may often be appropriate to think in terms of unintended effects rather than long-term plans. This may apply to the modification and elaboration of the monuments or to the link between the development of Arran as a focal point for the region and traditions of exploitation in the Mesolithic which included Arran's particular range of lithics and other resources. Another example may be the shift to a new mode of agricultural production initiated by early experiments with new techniques and resources. The later Neolithic and the transition to the early Bronze Age are marked by an increase in the tempo of ideological change as the confirmation of ritual authority is followed by a rise in secular authority and acknowledgement of individual power. There is evidence of



greater complexity in both internal relationships and outside interaction, and the range of different monuments, both ceremonial and burial, as well as the succession of prestige artefacts is in marked contrast with the constancy of the chambered cairns and the undifferentiated artefacts which were deposited in them. Again the historical approach makes a break from traditional period-based studies in which variations in the tempo of change cannot be judged.

### 9.3.3 Investigation of Region and Sub-Region

An important feature of the research has been investigation at both regional and sub-regional scales. This has allowed interpretation to move beyond the analysis of a closed system, as in some previous studies of Arran, to an approach which allows macro-locational patterns at a regional level to be observed while remaining aware of micro-locational conditions. The key to achieving this has been the separate quantitative analyses at regional and sub-regional scales (chapter 5). Local environmental conditions are likely to contribute to decision-making at a local level concerning the positioning of monuments. The overall pattern of burial, ritual or ceremonial monuments within the region is however likely to be governed by a more general perception of their relationship to settlement, to agricultural activities or other routines of everyday life. The importance of this approach has been clearly illustrated in chapter 8 by the findings concerning all the monument groups. A significant example is the finding (8.2.4:A) that at regional level the distribution of Neolithic cairns is not directly related to areas of settlement or farming territories as has often been assumed in previous work. This enlargement

of understanding was only achieved by the analysis at the regional as well as the sub-regional scale, and the integration of monument with other cultural evidence. Its interpretation on the other hand was made possible by understanding the particular historical conditions of the region. Single-island studies, focussed on a single monument type (Renfrew 1973a, 1976; Perry 1984, Perry and Davidson 1987) do not offer these opportunities. Even if, as in Perry's study, different scales of analysis - cairn site, cairn territory, island - are attempted, the conclusions remain restricted to the island system. The importance of attention to both macro- and micro-locational factors was further demonstrated in discussion of the restricted distribution of stone circles within the region and the occurrence of a ceremonial complex on Machrie Moor (8.3.4:I:C). The increased understanding of the monument record achieved by attention to the scale factor in both the temporal and spatial axes is evident in the synthesis of the findings presented above (8.5).

A keynote of these findings has been that throughout they emphasise the significance of the historical context and the social and environmental circumstances specific to the Firth of Clyde region and the sub-regions of which it is composed to understanding the appearance of monuments and their transformation through time. This suggests that it is not appropriate to seek general explanations or to expect a single universal cause, for example for the appearance of megalithic monuments in Atlantic Europe. This is made clear by the realisation that Arran played a distinctive role within the Firth of Clyde region which is not in keeping with what has been presented in previous studies (Renfrew 1973a, 1976) in which Arran has been taken as an example typical of the Atlantic seaboard of Europe.

#### 9.3.4 Monument Form and Function

In previous work much attention has been paid to the architectural form of the 'Clyde' cairns of the Neolithic (Scott 1969a, 1973a; Henshall 1972), whereas, as was noted (1.2.5), artefact and burial evidence have taken priority over systematic study of the architectural form of the burial monuments of the early Bronze Age. Again the approach used in this study avoids this separation of the evidence by a consistent approach to the monument record. The architectural design of the six type monuments was examined with a view to studying the relationship of architectural form to function (cf. Kinnes 1976; Fleming 1972, 1973). Of particular importance were insights gained into the modification and elaboration of the Neolithic cairns (8.2.4:F). The interpretation, in relation to social relations and the meaning which the monuments had for those who built and used them, marks a departure from the traditional typological approach to the 'Clyde' cairns, whose validity had been questioned (8.2.1). A key feature of the monument record highlighted by this study was the finding that the architectural forms suggested that each of the type monuments was dedicated to a distinctive kind of activity. For example comparison of the architecture of Neolithic cairns with that of stone circles suggested marked changes in the provision for ritual and ceremony, while comparison of the architecture of Neolithic cairns with that of burial monuments of the early Bronze Age suggested transformation in the provision for burial. This was supported by the changes noted in burial evidence and in the deposition of artefacts. These and other findings added valuable insights which illuminated the



results of the analyses of frequency, spatial distribution and relationship to the location factors of the various monument groups.

#### 9.4 Overview

The methods developed have been successful in meeting the particular requirements of the research project.

Each of the approaches adopted has proved relevant to the research, and has made a distinctive contribution to the aims and objectives set out in chapter 1. As a result it has been possible to achieve significant advances in understanding and interpretation.

The full significance of these separate contributions to increased understanding and in new interpretations becomes evident as the essential findings are integrated into a whole in the synthesis presented above (8.5). An important aspect now apparent is the extent to which it has been possible, through study and analysis of the archaeological record and other evidence, to observe processes at work in society and changes in social relations through time.

Thus it may be recalled that the phases of monument building were found to represent periods of shared endeavour which may have been associated with maintaining social cohesion through the many changes which took place in the longue durée (Braudel 1972) of the Neolithic and early Bronze Age. These included changes in economy and settlement, in the routines of everyday life, in the maintenance of social relations and in the level of contact and the nature of interaction with the outside world. It was found that society moved through a period in which authority was placed with the ancestors. This was followed by a time in which ritual

authority lay with a powerful few before the point was reached where there was acknowledgement of individual power. The incentive to share in the building of major monuments declined, and, as stress on the individual increased, elaborate burials took the place of ceremonial monuments.

Inevitably this research project has raised problems as well as offering solutions. Of these perhaps the most important is that the evidence of Neolithic activity in Ayrshire, indicated from the distribution of polished stone axeheads (6.4), cannot be confirmed by the palaeobotanical evidence currently available (6.3.2). Here there is the possibility that further pollen analytical studies might provide more detail. Another approach to investigation of this problem could be a field walking programme such as was already suggested (6.4.2). The possibility that evidence of settlement, such as flint scatters or pottery sherds, might be found is strengthened by the knowledge that collections of flints are recorded from a number of areas of Ayrshire. Similar work in the field might also be fruitful in parts of Bute. Further insight into economy and settlement through research of these kinds may perhaps be the best way forward to increased understanding of the existing archaeological record. The poverty of the available chronological evidence, which has often been remarked in this thesis, means that many questions must remain unanswered. There seems little possibility of tightening the chronology of most of the type monuments. However the radiocarbon determinations currently awaited for circles 1 and 11 on Machrie Moor as a result of the recent investigations by Haggarty (1985, 1986) should be valuable in allowing the phases of monument building at these sites to be integrated with the environmental sequence provided by Robinson (1981). The extensive finds of pottery from these



investigations, currently under study, are also likely to provide important new evidence for the region, while the full report of investigation of accretions on potsherds will add further detail to knowledge of the economy and way of life on Machrie Moor. A number of Mesolithic sites have been recorded recently within the Firth of Clyde (6.2.2), and there is the possibility that further investigations may lead to a better understanding of this period. At the site of Auchareoch, south Arran, for example, where preliminary investigation has taken place (Affleck et al. 1985), it seems likely that further excavation may produce evidence of occupation in undisturbed areas behind the quarry margin.

This research project has concerned one small region of the British Isles. It lies outwith the 'core areas' sometimes identified in the later Neolithic (e.g. Bradley 1984a, 41-6) or early Bronze Age (e.g. Lanting and Van der Waals 1972). It was thus not in the forefront in developing special classes of monument such as passage graves, henges or cursus, nor was it tightly linked to the networks carrying prestige artefacts either in the later Neolithic or early Bronze Age. The research has demonstrated however that the Firth of Clyde was a region with coherent social organisation and intricate and significant patterns of interaction which, together with a maritime outlook, contributed to the distinctive development of Arran. This island is at present poor in land, sparsely settled and difficult of access. In the Neolithic and early Bronze Age it had resources, a well developed farming system on the pre-peat soils, and it lay at the core of a well integrated region and the centre of maritime communications which went beyond the confines of the Firth of Clyde. The nature of the interactive processes between the Firth of Clyde and other regions, for example the 'core areas', is not well understood and the



possibility remains of spheres of influence not apparent from the archaeological evidence. We should not be tempted therefore, on the basis of present perceptions, to designate the region as 'marginal' (cf. Fleming 1983).

The contributions which this research has made to study of the Neolithic and early Bronze Age of the British Isles may be summarised as follows. The research has illustrated the particular qualities of the Firth of Clyde region and its development during these periods of prehistory, thus adding to the knowledge of the regional diversity which obtained at this time. In addition the research has clarified the particular blend of circumstances and relationships which contributed to the distinctive position which Arran came to occupy, thus indicating that it should not be regarded as typical of the Atlantic facade of Europe in these periods. Finally the findings have demonstrated that increased understanding may be achieved from the time-depth afforded by a historical perspective, by regional as opposed to closed system study, by analyses which offer comparison at different scales appropriate to the area under study and by setting monument evidence as closely as possible in the perspective of social and economic development.

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