THE PRODUCTION AND CIRCULATION OF LATE IRON AGE SLIP DECORATED POTTERY IN CENTRAL EUROPE

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Thesis submitted for the degree of Doctor of Philosophy at the University of Sheffield.

July 1991

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Summary

The aim of this study is to investigate the organisation of production and exchange in the Later Iron Age, or Late La Tène period in part of Central Europe. Although a wide range of goods are considered in relation to this aim (Chapter 2), the focus of the thesis is on the slip decorated pottery which is a characteristic find on the larger settlements.

Following a review of current approaches to the archaeology of the period (Chapter 1), the second chapter summarises the current state of knowledge of the Later Iron Age in the study area (Czechoslovakia, Transdanubian Hungary and Poland). The third chapter considers the theoretical frameworks employed in the interpretation of non-capitalist economic systems. These are discussed in relation to the theory and practice of archaeological interpretation.

In chapters 4 and 5 the methods of analysis used in the study of the the slip decorated pottery are described. Chapter 4 focuses on the production of the pottery and the technology employed, relating this to the organisation of labour. Chapter 5 is concerned with the circulation of the pottery and the methods (petrological and typological analyses) used to interpret the distribution in terms of the actions which produced it.

Chapter 6 draws together the data discussed in the second chapter and that obtained from the analysis of the slip decorated pottery.

The picture of the period which emerges is at variance in a number of respects from that traditionally accepted, in that there appears to have been a high degree of continuity with the situation in the Middle la Tène in terms of the economic structures underlyinmg the emergence of sites of central character. The establishment of these sites was certainly associated with changes in economic relationships (some of which are symbolised by the production and circulation of slip decorated pottery), but these appear to be in addition to, rather than in place of, traditional forms of organisation.

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Acknowledgements.

In the course of writing this thesis I have recieved advice, assistance and support from an enormous number of people both in the countries which I visited in the course of the fieldwork, in France, and in England.

Funding for the project came initially from the British Council who awarded me a scholarship to Czechoslovakia in 1984 (in association with the Czech and Slovak Ministries of Culture) and Research Visits to Poland (1985, 1986) and Hungary (1986), in association with the respective Ministries of Education. From Sheffield University I recieved a scholarship (The Town Trust Scholarship 1986 - 1989) which enabled me to prepare the material collected in Europe for presentation as a Ph.D thesis.

Czechoslovakia.

Thanks are due to the staff and interpreters of the Czech and Slovak Ministries of Culture, to the staff of the British Embassy in Prague and to the British Council representatives and staff for the administrative support during my stay in Czechoslovakia.

I received invaluable help, advice and assistance from all members of the three Archaeological Institutes and two national Museums in Czechoslovakia and would like to acknowledge the particular contributions made by the following:

Archaeological Institute, Prague: Dr. E. Neustupný, Dr. P. Drda, Dr. N. Venclová, Dr. V. Salač, Dr. M. Kuna, Ms. B. Brabćová, Dr. M. Princ, Dr. D. Dreslerová, the staff of the institute library

Archaeological Institute, Brno: Dr. J. Meduna, Dr. M. Čižmář.

Archaeological Institute, Nitra: Dr. K. Pieta, Dr. J. Bujna, Mr. P. Porubský, Ms. E. Gromová, Academician B. Chropovský, Dr. G. Fusek, Dr. A. Točík, Dr. T. Kolník, Dr. E. Kolníkova, Dr. L. Illašová, Dr. J. Rajtar, Dr. I. Kuzmá, Dr. K. Kuzmová, Mr. F. Zlatohlavek, secretarial and technical staff, the staff of the institute stores at Nove Vozokany, and the staff of the institute library.
I would particularly like to thank Karol Pieta and his family and Josef Bujna for their hospitality and friendship during my visits to Slovakia.

National Museum, Prague: Dr. J. Bren, Ms. M. Ružičková, Dr. K. Sklenař, Dr. M. Slabina, Dr. J. Bouzek.

Slovak National Museum, Bratislava: Dr. L. Zachar, Dr. V. Turčan.

Regional Museums and Institute Field Research Units: Dr. P. Holodňák (Žatec Museum), Dr. J. Waldhauser (Žatec Museum and the National Technical Museum), Dr. J. Michálek (Strakonice Museum), Dr. Z. Sedlaček (Kolín Museum), Dr. J. Smid (Prostejov Museum), Mr. P. Čaplovič (Oravske Podzamok museum), Dr. J. Kosina (Turnov Museum), Dr. J. Fröhlich (Strakonice Museum), Ivan Ponduša (Poprad Museum), Dr. V. Hanuliak (Ružomberok museum), Dr. S. Truglý (Komárno Museum), Dr. F. Javorský (Spišske Nova Ves), Dr. J. Beneš (Most), Dr. M. Neuwirth (Závist), Dr. M. Lamiová, Dr. P. Jurečko, (A.U. Kosice).

Kommenius University, Bratislava: Professor B. Novotný.

The directors and staffs of the following museums allowed and, where possible, facilitated access to their collections: Sušice Museum, Hradec Králove Museum, Kolín Museum, Strakonice Museum, Písek Museum, Litoměřice Regional Museum, Žatec Museum, Moravské Museum, Brno, Bratislava Municipal Museum, Košice Museum, Ružomberok Museum, Liptovský Mikulaš Museum, Poprad Museum, Prostejov Museum, Olomouc Museum.

I would like to thank Jiři Waldhauser, Petr Holodňák, Martin Kuna, Daša Dreslerová and Jaromir Beneš, their friends and colleagues for their hospitality in Bohemia generally and at Bodí in particular.

Poland
As in Czechoslovakia I recieved invaluable help from all the members of staff of the museums and institutes concerned, and particularly from the following:

Professor K. Godłowski, Dr. M. Parczewski, (Jagiellonian University).

Dr. Z. Woźniak, Dr. H. Dobrzanská, (Polish Academy of Science)

Dr. P. Poleska, Dr. G. Toboła, Dr. J. Rydżewski (Nowa Huta Museum), Dr. K. Reguła (Wielicka museum), The monks of the abbey at Tyniec, The staff of the Archaeological Museum, Kraków, Wielicka Regional Museum, Wawel Castle museum, Wroclaw Museum, Dr. M. Pawlikowski (Institute of Mining and Steel Technology, Kraków)

I would also like to thank the British Consul in Warsaw for his assistance with the train fare in 1985.

Hungary

Dr. E. Bónis, Dr. K. Wollack, Ms. M. Tobagyi, Dr. T. Kovacs, (Hungarian National Museum) Dr. M. Keleman (Ballassa Balint Museum, Esztergom) Dr. M. Péto, Ms. K. Debitzký, Mr. A. Horvath, (Budapest City Museum), Dr. E. Jerem, Dr. D. Gabler (Institute of Archaeology), Dr. L. Horvath (Nagykanisza Museum) Dr. M. Szabó (Museum of Fine Art, Budapest), Dr. Z. Banki (Szombathely Museum), Dr. M. Fekete (Sopron - Velemszentvid).

Thanks are also due to the staff of the following museums: Hungarian National Museum, Duaujvaros Museum, Sopron Museum, Szombathely Museum, Balassa Balínt Museum, Esztergom, Budapest Municipal Museum, Nagykanisza Museum.

I would like to thank Professor F. Maier, Dr. S. Sievers, Dr. U. Geilenbrugge of the Römisch-Germanische Kommission for their help with the material from Manching and providing a memorable visit to the site and to the institute in Ingolstadt.

France

My participation in the work of the Auvergne Archaeological Survey contributed in a number of ways to the writing of the thesis, not least in providing a standard against which real stress could be measured. I would like to thank the members of staff and volunteers who have taken part in the various seasons between 1983 and 1989, particularly those who appreciated the importance of the work on the pottery. In particular I would like to thank the following:

M. V. Guichard (C.N.R.S.), M. G. Loison, M. H. Desfeuilles, M. and Mde. Arduini, the director and staff of the Direction des Antiquites d'Auvergne, George Rogers and the staff of the excavations at Lezoux.

Special acknowledgements are due to the staff of the Auvergne Archaeological Survey, notably the 'Pottery Room teams' 1985 - 1989, particularly: Frank Jolley, Kevin Andrews, Rachel Edmonds, Reuben Thorpe, Isca Howell, Karen Miller, Deborah Gilkes, Phil. Williams, Karen Sanford, Zoe Morris, Avril Braggins, Liz Harvey, Ingrid Aszkenazy, Jo. Hambly.

England

Thanks are due to all my colleagues in the Department of Archaeology and Prehistory at Sheffield University for advice, assistance and their toleration of my, (occasionally unreasonable) demands for more space and resources. Particular thanks are due to Professor J. R. Collis who suggested the subject of the thesis in 1983, has acted as my supervisor in the subsequent years, and whose project in the Auvergne provided me not only with invaluable practical experience of working with Iron Age pottery, but also led to a number of other experiences best described simply as interesting.

The following have all offered advice and assistance on a number of matters, both practical and theoretical: Professor K. Branigan, Dr. P. Nicholson, Dr. J. Moreland, Mr. A. Woolf, Mr. C. Merrony, Dr. P. Halstead, Dr. G. Jones, Ms. C. Coutts, Dr. P. Phillips, Dr. M. Zvelebil, Dr. B. Ottaway, Mr. Edwin Okafor, Mr T. Corns, Mr. C. Grimbley, Mrs. M. Torrey

Dr. P. Nicholson, Dr. H. Patterson, Ms. C. Coutts and Mr. O. Stilborg gave advice and assistance regarding the processes and problems of petrological analysis.

I would particularly like to thank Mr. K. Andrews for a nmber of stimulating discussions on the subject of pottery technology, and for his recognition that the importance of archaeometry lies in the field of archaeology rather than of materials science.

Advice on computer hardware, software and statistics came from: Dr. N. Fieller (Department of Probability and Statistics, Sheffield University), Mr. R. Richards, Mr. P. Leman and other members of the staff of the Computer Services Department (Sheffield University), Mr. J. Claxton, Mr. R. Adams, Mr. R.E. Sydes (SYAU), Dr. D. Barrett (Derbyshire County Council).

A number of departmental seminars have proved stimulating over the years, but the Social Theory seminars, organised by Andrew Fleming, Trevor Kirk, Matthew Johnson, Mark Pluciennik and Mary Ann Owoc have proved particularly useful. Participation in the Cambridge Iron Age Symposium (1988), organised by Dr. G. Woolf also proved particulary useful.

The following have read sections of the thesis and offered advice regarding the structure and content. They cannot be held responsible for the final product: Dr. C.H. Gosden, Dr. A. Myers, Mr. A. Woolf, Mr. J.D. Hill, Dr. J. Moreland

Mr. R. Thorpe, Mr. J. Dunkley, Mr. I. Cumberpatch and Ms. L. Barnes all offered essential advice and guidance on the production and reproduction of the drawings.

I would like to thank all my friends for their continual support and practical advice throughout the writing of the thesis:

Sheffield, Bradford, Hull and London: Bob Sydes, Mark Pluciennik, Dave Dale, Liz Boon, Reuben Thorpe, Rob Watson, Shaun Rylands, Mike Heyworth, Kevin Andrews, Trevor Kirk, Simon Butler, Graham Mounteney, Max Adams, Jon. Dunkley, 'Bill' Barkle, Dom. Latham, Kay Harvey, Karen Miller, Mark Beech, Andy Myers, the former staff and patrons of the Glossop Road Turkish Baths, Jeremy Robinson, Helen Bush, Colin Merrony, Alex Woolf.

Prague: Petr Vanecek, Nils Gjerdevik, Margarita Otero, Olli Valkonnen, Geoffery Brown, Angela Thwaites, Petra Ruzickova, Marie Ring, Mark and Katrin Perkins, Jana Vojtechova.

Kraków: Prabir Mitra, Pietro Dini, Ben Hume, Susanna Davidson

Budapest: Neil Fodor, Richard Berry, László Előrsi, Zsuzsa Kovacs, Eszter Almássy

Particular thanks are due to Mary Ann Owoc for the concept of ~~Production~~ and her absent presence (présence) throughout the final (?)writing of the (?)text.

Above all I would like to thank my parents and my sister, without whose support over the last seven and a half years the completion of this thesis would not have been possible.

Preface.

0.1 Introduction.

The La Tène period, and particularly the Late La Tène or La Tène D, (100 - 20 BC) is one that has enjoyed something of a unique profile over the last 150 years, not only amongst archaeologists but also amongst specialists in other disciplines (including philologists, historians and folklorists), nationalist politicians, mystics and the general public. It owes this profile to a number of factors, the chief of which is its position at the junction between prehistory and history. It was during the last few centuries BC that temperate Europe first became the subject of written accounts, involving named individuals and political events played out between identifiable actors. These accounts, the work of Greek and Roman historians, statesmen and propagandists, also gave details of the organisation of these societies and their social institutions. As I shall discuss in chapter one, such a distinction has not proved, from an archaeological point of view, to be an unmixed blessing, but it has served to fix in the modern mind an image of the period that is both more vivid and perhaps more deeply entrenched than any of those which exist for earlier periods. The interpretation of the archaeology has also served to distinguish the Late La Tène from earlier periods, if not in terms of its individual traits, then certainly in their co-incidence. John Collis has summarised the period as follows;

> The bulk of the evidence we have for this period is from settlements, notably the oppida themselves. These ... produce plentiful evidence for contact with the Mediterranean world in the form of amphorae and black slipped wares. Likewise the large size of the houses indicates social differentiation. Though there is no evidence for any major technological innovations since La Tène C, there is a marked change in the scale of production, especially of iron, and generally the glass, bronze, iron and pottery industries are largely centralised. The oppida also act as centres of redistribution and the wealth of small bronze, potin and silver coins suggest the adoption of market exchange. (1984b:49).

Though this view of the period is not without its critics, there is a wide concensus of opinion that the Late La Tène saw the establishment of Europe's first towns and, more contentiously, the beginnings of a market economy. As such it can be perceived as occupying a special position with regard to our own society and its historical heritage, a position which J.D. Hill (1989) has characterised as safe, familiar and historical. A crucial factor in the establishment of this position has been the identification of the period as 'Celtic', a term which has taken on ideological, and even metaphysical, overtones in a way which, it has been suggested (Collis 1985, Hill 1989, Champion 1990, Cumberpatch in prep.), is out of all proportion to its archaeological significance.

As a result of this, and in spite of the level of interest in the period, of extensive programmes of excavation and of synthetic accounts and collections of papers concerning the period (e.g. Filip 1956, Cunliffe and Rowley 1976, Collis 1975, 1984 a, b, Wells 1984) a number of major themes have remained either unexamined or have been marginalised within the field of research as a whole. Amongst these are questions relating to settlement, society and economy in the Middle La Tène period, to the origin and wider role of the oppida in relation to pre-existing and contemporary undefended settlements and to the organisation of the production and exchange of goods. It is one aspect of the last of these, specifically the manufacture and circulation of fine, slip decorated pottery, which forms the subject of this thesis. The study area, Czechoslovakia, southern Poland and Transdanubian Hungary, was chosen as it is in this area that the slip decorated pottery first appeared, associated with some of the earliest oppida, founded in the latter part of La Tène C2.

The origin of the project lies in the analysis of the pottery from the Iron Age site of Aulnat in Central France. The analytical framework employed in the evaluation of this material was designed with the intention of exploring the organisation of pottery production throughout the Early, Middle and Late La Tène periods and into the early Roman provincial period. This involved the detailed description of the pottery assemblage in terms of types, defined according to technological criteria. Though material from nearby sites has been, and will continue to be, examined in the same way, the project was essentially based on the material from the single site (Cumberpatch 1989).

In concentrating on a multi-regional study area and a single type of pottery, the present project was devised in conscious opposition to this and was intended to develop a similar kind of economic analysis in a quite different context. Circumstances have dictated that the research programme based on the Aulnat material has not progressed beyond the data gathering stage, while the work on the Central European slip decorated pottery has advanced to a state where it is now influencing the earlier project, a complete reversal of the situation in 1984 - 5.

The material concerned is wheel thrown pottery decorated with horizontal bands of red and white slip, sometimes overlain with grey geometric patterns. It has long been recognised as a product characteristic of the Late La Tène period, and associated with the oppida. In Bohemia the publication of the material from the oppidum of Stradonice (Píč 1906) led antiquarians to speak of it as identifying a 'Stradonice culture', and subsequently it has come to be regarded as a valuable chronological indicator, particularly following the publication of the material from Manning in Bavaria (Maier 1963, 1970).

From the beginning my concerns in studying the pottery were two fold. The first was with the organisation of production and its relationship to social organisation, and the second was with the organisation of the circulation of goods, which, as I shall outline in chapter 3, I see as being constituted by and, to an extent, constituting, social relationships.

My interest in the first of these led to a decision to concentrate upon manufacturing technique as a possible entry into the area of the social dimensions of the organisation of production. This in turn led to an encounter with certain aspects of Marxist theory as a means of understanding the relationship between the methods and techniques of production and the social relationships within which acts of production take place. This use of Marxism stops short of an ideological commitment to the philosophy in its fullest sense, and the analysis should be considered as influenced by the writings of Marx and subsequent commentators, rather than being Marxist in the orthodox sense of the term.

The second principle theme, the circulation and exchange of goods, appeared to be particularly important, not only because of its central relevance to the study of Iron Age society, but also because the subject of the circulation of indigenously produced goods at a local and inter-regional scale, has been, if not ignored, then at least sidelined in comparison with that of goods originating from Greek and Roman workshops. In part this bias stems from the relative invisibility of locally produced goods (Collis 1984b:146-7) and a lack of analytical studies, but it is also a result of the strong ideological commitment in Iron Age studies towards a major role for the Mediterranean societies in late prehistoric Europe (Champion 1990).

In choosing the slip decorated pottery as the principle object of study my intention was to examine the circulation of an easily identifiable category of artefact and to set this into a framework of explicit economic theory drawn from anthropology, in conscious opposition to the 'commonsense' models and implicit assumptions which have dominated explanation in European archaeology (cf. Nicholson 1989).

In the first chapter I shall present a brief summary of the principle themes which have structured research into the Later European Iron Age, concentrating on those approaches which form the current orthodoxies. The first, and larger, part of chapter 2 consists of a description of the archaeology of the study area, concentrating on the economic organisation of Middle and Late La Tène society and provides a context for the slip decorated pottery. The second part relates this information to the views of the Iron Age described in chapter 1.

Chapter 3 consists of a discussion of the various approaches to non-capitalist economic systems and the ways in which the social components of economic systems can be approached archaeologically.

In chapter 4 the technological aspects of slip decorated pottery production are described and this leads on to a discussion of the organisation of the production process and its relationship with the production of other types of goods. At this point it is convenient to note that I consider the term 'painted pottery', which is widely used to refer to the material in question (*bemalte Keramik, malovaná keramika, malowana keramika, céramique peinte*), to be a misnomer deriving from a lack of understanding of the techniques used in its decoration. The details of this question are addressed in section 4.3.1, the purpose of this note being simply to record the fact that the two terms ('painted' and 'slip decorated') refer to the same material.

In chapter 5 the physical, statistical and typological methods used to investigate the circulation and exchange of the slip decorated pottery are described and an interpretation of the data acquired by these means is presented.

In the final chapter the information gathered is synthesised and suggestions are made regarding the organisation of production and exchange and their relationship to other aspects of Late La Tène society, including the position of the oppida and their relationship with the undefended sites. A number of appendices summarise supporting data, site descriptions and a catalogue of the material examined.

Before proceeding to the first chapter it is convenient here to present an outline of the chronological position of the slip decorated pottery, both in absolute terms and with reference to similar material in other parts of Europe.

0.2 Chronology.

The basic chronological scheme for slip decorated pottery has been drawn up by Maier (1970) based on the material from the oppidum of Manning in Bavaria and from sites in France and Switzerland. Maier has distinguished two principal phases, an earlier, known as the Ensérune phase, and a later known as the Roanne phase. The former, characterised typologically by tall thin jars and vases has been dated to La Tène III (La Tène D1) and is never found mixed with Roman provincial material, though at Ensérune in Southern France and Aulnat in Central France it occurs alongside imported goods from various parts of the Mediterranean (Maier 1970, Andrews, Collis, Cumberpatch and Watson in prep.). The Roanne horizon, defined by material found at Roanne, Basel (Münsterhugel), Augst, Vindonissa, Zürich and

Cambodunum is associated with finds dating to the Augustan period (ie between 27 BC and 14 AD), and may, in some cases, be even later. The somewhat later slip decorated pottery from Switzerland has been dated by its association with Roman material from between the late Republican (mid - late 1st century BC) and Flavian (70 - 96 AD) periods.

As regards the study area the material from Bohemia and Moravia appears to be the earliest. A small group of vessels from graves date to the Middle La Tène, but, for reasons which will be explained in Chapter 4, these do not seem to be directly related to the material from the later settlements.

Two settlements in Northwestern Bohemia, Radovesice (Pit 97) and Vikletice have produced sherds of pottery in contexts dating to La Tène C2. A particular problem with the definition of this early phase is the lack of stratified material from the oppida, the collection from Stradonice being unstratified (Břeň 1973), while the publication of dated groups from Závist is still awaited. The recent excavations at Stradonice and the associated reinterpretion of the brooches from the site (Rybová and Drda 1989) suggests that the La Tène C2 occupation of the site is less dense than that in the following period, though this does not rule out the use or even the production of slip decorated pottery at this time. The re-evaluation of the material from the Vorburg of Závist by Miloš Čižmář (1989) suggests a similar history for this oppidum, and the late date for the slip decorated pottery, 40 - 30 BC (Drda 1981), requires verification with reference to other stratified groups. The quantities of slip decorated pottery from Hrazany are low, and though the contexts have been published (Jansová 1986, 1988), an interpretative volume is not yet available. Třísov, the source of the principal group of southern Bohemian material, does not appear to have been founded before 30 BC and is thus of little help in understanding the earlier phases of slip decorated pottery production.

The bulk of the evidence indicates that it was during La Tène D1 and D2 that slip decorated pottery achieved its widest distribution. The excavations at Třísov, specifically designed to evaluate conclusions based upon the unstratified material from Stradonice (Břeň 1966, 1973), have shown that the oppidum was constructed in the mid 1st century BC and that slip decorated pottery occurs in the earliest features on the site. This dating coincides with those which have been suggested for undefended sites such as Skaly near Písek. A later group of material is represented by a series of sites in Northwestern Bohemia (including Tříškolupy, Kadaň-Jezerka, Lovosice and Soběsuky) which Holodňák (1987) has stated belong to the La Tène - Roman transitional phase late in the 1st century BC. Although the precise nature and dating of this period (which marks the end of the La Tène Iron Age) is still disputed (Venclová

1987, Waldhauser 1984c), there are no obvious changes in the characteristics of the slip decorated pottery assemblages found on the later sites as compared to earlier ones (Holodňák 1987).

In Moravia, Meduna (following Maier) has used the presence of slip decorated pottery as one of the criteria for the definition of phase 6 of the undefended settlements, a phase which, in absolute terms, covers the period 75 - 0BC (Meduna 1980:98-99). He notes however that production probably begins at the end of La Tène C, and in connection with this the full publication of the material from the oppidum of Staré Hradisko (founded in the latter part of La Tène C2) will be crucial.

Pieta (1982:118-122) has summarised the evidence for the production and use of slip decorated pottery in the Carpathian basin and Malopolska and has concluded that it both starts and finishes later than in the areas to the west. No slip decorated pottery can be unequivocally dated to a period before La Tène D2, even from sites with earlier phases such as Bratislava and Krzesławice (Zachar and Rexa 1988, Poleska and Toboła 1984, 1988). Bónis (1969) has suggested a similar date for the material from Tabán - Gellérthegy (Budapest). Such a chronological sequence does cause slight problems when compared with Maier's scheme, as the latter uses the occurrence of the hemispherical or globular '*bol Roanne*' as a chronological marker for the later phase. Though bowls of this general form occur in Slovakia (Zachar and Rexa 1988: Figure 28;1) and neighbouring areas (Bónis pers. comm.), similar forms also occur widely in Bohemia and Moravia and are typical of the Stradonice assemblage (Figures 4.1.1 - 4.1.4). Though some should doubtless be placed late in the chronological sequence, there is room to question whether the chronology is the complete answer to the problem, given the typological variations involved and the dangers of assuming contemporaneity of occurrence across the whole width of Europe.

To summarise the chronological position of slip decorated pottery within the study area, it seems that the earliest phases of production took place in Central and Northwestern Bohemia during the later stages of La Tène C2, with some expansion occurring in La Tène D1 and D2. In Slovakia and Małopolska production began during La Tène D2 and continued into the 1st century AD, the East and North being the areas in which it continued longest. In Hungary, as elsewhere, some elements of the tradition were maintained by potters working in the Roman provincial pottery industry.

Chapter 1.

Approaches to the Later European Iron age.

1.1 Introduction.

My intention in this chapter is to describe the principal approaches to the archaeology of the Late Iron Age, outlining what I see as the current orthodoxies and defining my own position with regard to them. This will provide the background to a description of the archaeology of the study area (chapter 2) against which some of these approaches will be assessed.

1.2 The study of Iron Age societies.

Theoretical approaches to the European Iron Age have, historically, followed those of other branches of archaeology and have been influenced by various regional traditions. In Britain, the U.S.A and parts of Europe a general progression from antiquarianism to archaeology and a subsequent increase in the self consciousness of the latter can be as easily traced in terms of the Iron Age as they can in, for example, the Neolithic. The impact of the New Archaeology of the 1960's and 1970's is equally visible, primarily in the research and excavation strategies pursued regionally and on individual sites and with material recovered (Collis 1984c) but also in synthetic accounts of the period (Collis 1984a, b, Champion, Gamble, Shennan and Whittle 1984). More recently there have been the beginnings of a move towards a more radically self critical position with the adoption by some writers of post-processualist and critical stances (Hill 1989, unpublished, Cumberpatch in prep.).

In spite of this broad conformity with the overall changes in the discipline of archaeology it has been suggested that the ways in which the period has been conceived have in some way lagged behind the radical conceptions offered for other periods (Hill 1989). Though many would dispute Hill's characterisation of the period as 'boring' in terms of 'aims, assumptions and language' (Hill 1989:16), it is undeniable that the Iron Age is frequently seen as possessing characteristics that set approaches to it apart from earlier prehistory and also from later, historical periods. In Europe these differences are reflected in the use of terms such as *protohistoire* and *Frühgeschichte* (as opposed to *préhistoire* and *Vorgeschichte*) to refer to the period, terms which also give a clue to the nature of the separation. This separation derives principally from the fact that, owing to activities of Greek and Roman writers, it is during the course of the Iron Age that we first have written records relating to an indigenous society in temperate Europe. There are, in addition to these contemporary accounts, the later texts produced in Ireland and Wales

which, being the written versions of oral histories, relate, in some aspects at least, to a period rather earlier than that at which they were written (Champion 1985). Simultaneously the small number of texts and their nature is enough to set the period apart from later historical periods.

It has been argued elsewhere (Champion 1990, Hill 1989, unpublished, Cumberpatch in prep.) that there has been a strong tendency in European thought since the Renaissance to ascribe a privileged status to Classical sources and to the literary texts in particular. This tendency has been adopted almost uncritically and, in many cases apparently unconsciously, by practitioners of Iron Age archaeology. In spite of the recent attempts that have been made to approach the period from an alternative point of view (Collis 1984a:10, Champion 1987, Hill unpublished) a powerful body of opinion has retained and expanded positions based on a view of the Iron Age derived from Classical and other texts. This position is particularly strong in Europe, but also has advocates in Britain. Two of these are Andrew Fitzpatrick and Daphne Nash, who represent a developed form of the tradition and are influential in its propagation. Their views, together with others that have a clear affinity with them will be described and evaluated in detail in section 1.3 below.

For historical and political reasons archaeological theory and practice in Central Europe have been dominated by a broadly Germanic intellectual tradition. Although this domination has recently been challenged, principally by the spread of ideas derived from the New Archaeology (Kuna pers. comm), it remains the accepted orthodoxy throughout the area under consideration here.

The Germanic tradition is characterised by a concern for the recovery of 'pure' data from both excavation and the study of the materials excavated. The analysis of the materials is, typically, based upon typological methods (and more recently physico-chemical analyses) of considerable complexity. There is a general reluctance to examine the premises underlying the methods of analysis, and a rejection of the philosophy and practice of both processual and post-processual archaeologies. The effect of this type of archaeology is far from the neutral, descriptive, intentions of its practitioners. In practice implicit theory abounds and, in the absence of any alternative strategy, interpretation employs analogies drawn from sources deemed 'acceptable'. Thus descriptions of Iron Age settlements are characterised by terms such as *Fürstensitz* and *Adelsitz* drawn from the medieval period (Frankenstein and Rowlands 1978, Nicholson 1989:46-7), and by terms derived from Classical Greece, such as *Acropolis* and *Temenos*. The applicability of these terms is rarely discussed, in spite of a total lack of any demonstrable relationship between, for instance, Greek temples and *Viereckschanzen* (discussed in more detail in section 2.4), or

the fortified nucleii of the Greek *poleis* and hilltops enclosed by oppidum ramparts. Explanations advanced for phenomena tend to be monocausal and loaded with implicit assumptions, the best examples being ethnicity, which is all too frequently assumed without being demonstrated (Taylor unpublished), and the concept of 'Culture' in its Childean sense. The effect of this tradition can be seen in the production of bodies of data, often superbly presented, but which, to the critical mind, are flawed by the wide range of unexamined assumptions which constitute their theoretical foundation.

In the countries which form the study area of this thesis a second influence has combined with this tradition to produce a distinctive effect, and simultaneously to offer a powerful impulse for change. Marxist-Leninism, established by force in Central Europe during the 1940's and imposed upon archaeologists as upon all others, effectively destroyed open debate upon subjects other than those sanctioned by Party ideologues (Starling 1985). Thus archaeological analysis, far from benefiting from a critical approach to Marxist social theory, as has been the case in the West, was compelled to operate with theoretical constructs based upon a Leninist interpretation of the writings of Karl Marx (Pleiner and Rybová 1978, Pleiner 1979, Dušek 1973). Though this tradition apparently has some appeal to those who have not worked within it (Champion 1987:100), in Central Europe, and in Czechoslovakia in particular, it formed little more than a strait-jacket constraining discussion and forcing archaeology down the path of description and data collection. Thus the politically uncontroversial and esoteric Germanic archaeology became an officially sanctioned orthodoxy, with synthetic texts occasionally prefaced by brief references to Marxist-Leninist concepts such as 'military democracy', 'mode of production', 'forces of production', but with no critical discussion of the concepts involved (Starling 1985, Janík and Zawadzka 1990, Malina and Vašiček 1990:138-148). In spite of this, and as part of the intellectual opposition to Stalinistic Socialism, informal discussion of theoretical issues continued and a number of archaeologists have sought a way out of the wilderness, in part by trying to apply the methodology of the New Archaeology (Waldhauser, Kuna pers. comm.). As a brief aside it should be noted that the participation of this group of archaeologists in the events of 1989 and in subsequent national reconstruction offers the hope of a revitalisation of Central European archaeology in both practical and theoretical terms.

A consequence of the persistence of these two traditions within the study area, together with the privileged status ascribed to information derived from the Classical sources, is that there have, in general, been few attempts to consider the archaeology of the Iron Age, and in particular the later Iron Age, as anything more than the material expression of 'Celtic Society', this being known (in various senses of the

word) through textual references. In common with a number of British archaeologists I find that this approach offers little insight into the nature of Iron Age society in comparison with those derived from a 'soft' processual and, more recently, post-processual critique of the nature of archaeology and archaeological data.

Consequently, although this thesis is concerned exclusively with Central European material, the context within which it was conceived and has been carried out is a self-consciously British one, influenced by both processual and post-processual traditions, and one which is based on different philosophical premises, has different aims, and uses different methods to those traditionally found in the areas in which the material was collected. For this reason I have avoided detailed discussion of certain areas of debate (primarily questions related to ethnicity), except where they impinge directly upon the subject under discussion, and have pursued others (such as the nature of the economy and the production and circulation of goods), although some of these have yet to make a real impact in the areas with which I have been concerned.

1.3 'Celtic Society' and the question of Roman influence.

In this section I shall outline the main tenets of a number of views of the later Iron Age which, while not representing a coherent 'school of thought' are nevertheless united in their focus on the relationship between temperate Europe and the Mediterranean, as a key factor in understanding the nature of Iron Age society. The first of these is that of Daphne Nash.

The clearest statement of Nash's views, as applied to the Later Iron Age, is given in a paper entitled '*The Basis of contact between Britain and Gaul in the Late Pre-Roman Iron Age*' (1984). As with the majority of her work, this is concerned specifically with the situation in Gaul, though various references (1984:93, 1985, 1987b) make it clear that she sees the basic ideas as generally applicable.

Her starting point is a view which sees 'Celtic society' as having strong and distinctive characteristics, being militaristic, competitive, hierarchical and expansionist. In terms of social relationships she sees it as basically dualistic, divided into peasants and nobles. The contribution of the peasantry is fundamental in that she describes the society as

> 'agrarian, meaning that ... subsistence was based upon compatriot agricultural labour' (1984:95).

The production and exchange of subsistence goods, compelled by geographical variability,

> 'had a relatively modest influence upon most societies' social development' (1984:96).

More significant for such development was the appropriation of peasant labour by the nobility:

> 'Compatriot peasant labour was ... the foundation of noble wealth. Peasants' agricultural produce and labour services contributed to the support of the nobility through customary dues, tax and rent, while their military services were employed for the defence or enlargement of territories, and to conduct disputes with rival nobles or external neighbours; warfare was also in most societies a useful source of windfall revenue in the form of spoils, ransom and indemnity payments, and could lead to long term revenue in the form of tribute from defeated opponents.
> An important component of noble wealth was therefore provided by revenues from free compatriot peasants, and the way in which they were obtained gave each society its distinctive economic orientation. This was, however, not sufficient to sustain a developed political economy, and was in consequence supplemented by the produce and labour of slaves, dependant craftsmen, resident foreigners and non-compatriot tributary dependants. Revenues from these sources were of vital importance if political expansion was to take place. Noble revenues which were not directly consumed were mainly converted into higher forms of wealth by customary exchange associated with mutual hospitality and diplomatic agreements, and by negotiated trade with external societies, all of which gave access to, politically, the most significant categories of wealth.' (1984:96).

This extraction of surplus from the peasants, together with contractual obligations between kin groups gave rise to a number of basically similar societies. Within this similarity Nash defines two 'distinct variant forms of Celtic agrarian society' (1984:96). These were distinguished by the ways in which peasant labour was converted into the wealth (and hence power) of the nobility. The two forms are termed 'agrarian' and 'warrior' societies.

> Agrarian societies
>
> 'were those in which agricultural produce, raw materials and finished goods produced within a society itself, both by free peasants and by dependent labour were the principal basis of social wealth' (1984:97).

In these societies exchange, both internal and external, was the principal means by which surplus was transformed into value. The effect of this was to encourage an early development of internal marketing systems, controlled by the elite. Trade with other societies, particularly those from whom exotic and prestigious goods could be obtained rapidly became important as a source of valuables. To obtain these valuable items the society had to produce goods for exchange. Nash suggests that in this context metals (tin, silver, copper and gold) were of particular importance. The immediate results of this were a 'large and heavily exploited producing population' (1984:97), who supported miners and specialist artisans, and a militarily active and internally competitive elite. This elite would tend to avoid wars that would disrupt

the production of goods for exchange. Archaeological correlates of this type of society can be seen in the coinage and in the settlement pattern. Nash suggests that coin types would have been restricted to a well defined territory, having no role in inter-group exchange. She describes the major settlements in terms that recall the standard descriptions of the oppida:

> 'major nucleated centres ... with both political and economic functions. These settlements needed access to a varied immediate hinterland, and the strongest also tended to dominate long range lines of communication ... and were generally linked very closely with a port of foreign trade ... They were also centres of manufacturing activity ... and possessed storage facilities associated with their distributional functions. ... Some ... were adorned with multiple ramparts whose construction made extravagant use of human labour and reveal a concern as much with ostentatious display as with defence' (1984:98).

The other major settlement type was the port of trade, close to the borders and providing a secure location for foreign traders and where goods could be assembled for exchange.

Warrior societies shared a similar subsistence basis with the purely agrarian societies, but differed in that access to wealth in the form of foreign goods was based upon a form of contact with other societies that had a strong military component. Nash divides this contact into two types, offensive warfare and negotiated exchange. Offensive warfare enabled a warrior elite to employ peasant labour in direct exploitation of weaker societies. Spoils, ransom and tribute were of critical importance as sources of surplus for both consumption and foreign trade. Negotiated exchange, the second source of wealth, took two forms. The first of these, and the most important, was the trade with stronger societies in the spoils of war, particularly slaves. Domestic produce played only a modest role in this trade, though animal products may have been important. Nash considers that

> 'such trade enabled warrior societies to obtain reliable supplies of luxury manufactured goods and exotic drink' (1984:99).

This trade was conducted either with visiting traders, or by warriors travelling to more distant marketplaces.

The second form of negotiated exchange was mercenary service in foreign armies, a practise mentioned by several of the classical authors. Such service not only provided the warrior with the normal types of plundered wealth, but also with payment in gold coinage and with the prestige of having been associated with a powerful foreign ruler.

These types of relationships with external societies were the principal source of foreign luxury and prestige goods and served to reinforce the structure of a warrior society. They therefore had an impact on the material culture of such a society and on the settlement pattern.

As military activity served the functions of production for exchange found in agrarian societies, the elite had to attract and maintain dependants of various ranks. This involved the production of goods suitable for feasting and display, designed to attract retainers and mercenaries. The emphasis was on weapons and portable items of wealth, including gold and silver coinage. The subsistence base was also affected by this type of military economy. Demands upon those of military age lead to the development of less labour intensive forms of agriculture, most probably pastoralism. The herds and flocks involved were probably also an important source and indicator of wealth. Nash summarises the characteristics of such a society as follows

> 'The overall settlement pattern of an agrarian warrior society in its purest form ... therefore reflects very clearly its peculiar social and economic commitments. Weakly developed internal marketing systems inhibited the development of craft production for distribution and exchange, and nucleated settlements with clearly defined distributional functions are therefore lacking. The largest noble settlements in a warrior society were instead in all likelihood the inflated households of the dominant nobility, attached to their estates, and might take the form of rambling establishments with internal pasturage for sheep, cattle and horses, and space for the accommodation of variable numbers of dependants and visitors. Ports of foreign trade ... were no more than formal and externalized points of contact with the outside world.' (1984:101).

The political results of such a form of social organisation were internal tensions of an intensity that could easily lead to chaos. There was a continual need for expansion to relieve these tensions. This took the form of migration and conquest and of increased mercenary service.

In developing this model of Iron Age society Nash has been concerned principally with the archaeological evidence from Gaul and southern Britain (1976, 1978, 1981, 1987b) and with the surviving references in the classical writers. She has explicitly extended the scheme to the rest of Europe, stating, for instance, that

> 'short range contact based upon recurrent mutual needs consequently bound *all* the regions of Iron Age Europe to their neighbours, and linked them in turn with the Mediterranean. ... manufactured goods of Mediterranean origin came to play a vital role in elite consumption and display *throughout* Iron Age Europe' (1984:94, my emphasis).

In a reference to the Central European societies she has stated

> 'Central Europe, from the middle Rhineland to the knee of the Danube, contained the original homelands of some of the most vigorous of all Celtic warrior communities, widely

> employed as mercenary soldiers and repeatedly participating in long-range emigrations' (1987b:61).

She has also characterised Bohemia in passing as a 'warrior stronghold' (1987b:17, 21).

Nash has set this view of 'Celtic' society in the context of Centre (or Core) - Periphery theory (1984:93). Derived from studies of the relationship of the capitalist world with the 'underdeveloped' world, Centre-Periphery theories are based on the principle that

> 'the underdevelopment of peripheral areas was not a result of their archaic social structures but a product of their historical relations with the developed world, ever renewed and intensified by the transfer of surplus and their dependance on manufactured goods and technological innovation from industrialised core areas' (Rowlands 1987b:3).

In archaeological contexts Centre-Periphery models have been applied to the relationship between relatively developed core areas (such as the Mediterranean) and less developed, but raw material-rich peripheries (such as temperate Europe). Full discussions of the concept, together with further examples can be found in Rowlands, Larsen and Kristiansen (1987) and Champion (1989).

In the context of the European Iron Age these Centre - Periphery models have in common a focus on the relationship between temperate Europe and the Mediterranean world, a relationship that is characterised, in general terms, by a flow of luxury goods from south to north and a flow of raw materials and slaves from north to south. Rather than technological innovation, the transfer of manufactured and luxury goods has been emphasised together with the role that these play in the representation and negotiation of power relationships within the peripheral society (Haselgrove 1982, 1987b, Nash 1984, 1987a,b, Cunliffe 1988). The position of the elite groups in temperate Europe is seen as dependant upon the control and manipulation of the flows of goods from the south, in the same way that Frankenstein and Rowlands saw the Hallstatt elites as dependant upon Greek goods (Frankenstein and Rowlands 1978). Indeed the Prestige Goods model is of particular importance in a Centre - Periphery context, representing one way in which the goods from the Centre were incorporated into the Peripheral economy (Champion 1989:12).

The evidence for the trade that is the cornerstone of these models is both textual and archaeological. The classical writers refer both to the activities of merchants and to the exchange of goods and slaves in temperate Europe (Collis (1984), Nash (1987a,b) and Fitzpatrick (1989) have summarised the information), and it is clear from the quantities of material recovered from both defended

and undefended sites in France that there was indeed trade on a large scale (Fitzpatrick 1985, 1989, Tchernia 1983, Peacock and Williams in preparation).

In a recent critique, specifically of Nash' views, Fitzpatrick (1989) has argued for a broadly based view of the interaction, which is more in accord with known Roman practise and with recent archaeological discoveries. Although he refers to the potential importance of indigenous exchange systems (1989:42), his prime concern is still to emphasise the north - south relationship, and the part potentially played in it by unobservable connexions, such as diplomatic contacts and alliances (1989:43) arranged for the mutual benefit of the elite groups in both societies.

The bulk of the archaeological data for all of these models comes from western and west - central Europe, and in particular from France, an area that is also the source of most of the information in the classical texts, particularly the later ones. When considering the situation in Central Europe a series of questions arise:

1) Can the later La Tène societies of Bohemia be classed as 'Warrior' societies in the sense defined by Nash (1984:99-101), as she has claimed (1987b:17, 21) ?

2) To what extent is the division of societies into 'Warrior' and 'Agrarian' justified?

3) Can the later Iron Age societies of Central Europe be judged to be 'Peripheral', in the sense defined by Rowlands (1987b) and Champion (1989) to the Mediterranean 'Core'?

4) Can the control and manipulation of exotic goods be seen to play any role in the establishment or maintenance of power by the elite groups in central Europe.

5) What contribution can these theories make to an understanding of the societies in Slovakia and Poland which, while they share certain traits with societies to the west, also exhibit their own distinctive regional characteristics.

The first four questions are of particular relevance to Bohemia, Moravia and the extreme western parts of Slovakia and Hungary, where the society is generally held to be a 'Celtic' one, sharing many important traits with those in France and Germany. Suggested answers to these questions, and their implications, will be considered in chapter 2, after a presentation of the archaeological data needed to answer them. If the answers are negative, then a further series of questions arise. The primary ones concern the organisation of the Central European societies, the source of elite power and its character.

More general questions, beyond the scope of this thesis, concern the degree and nature of regionalisation in later prehistoric Europe and the logic of equating the characteristics of societies in Western and Central Europe, while accepting quite different forms of organisation and power relations.

The fifth question relates to those areas which have received relatively little attention in the Western European literature. As I shall describe in chapter 2, Slovakia, Transdanubian Hungary, and Poland exhibit distinctive regional forms of development in the Later Iron Age, which, while they have parallels in areas to the west, are nevertheless to be distinguished from them. The relevance of Centre-Periphery and dependency theories to these societies will also be considered at the end of chapter 2.

1.4 Entrepreneurial Capitalism.

A viewpoint related to those described above is that held by Peter Wells and which he has set out in a number of recent publications (1984, 1987, 1988). While citing similar evidence as other writers for the importance of exchange with the Mediterranean world, he proposes an explanation based on the stimulation of individual acquisitiveness to account for the formation of nucleated communities during the Iron Age. In Wells' view the appearance of towns (in which category are included the sites of Hallstatt and Sticna, as well as the later Hallstatt period hillforts and La Tène oppida) owes much to the activities of individuals acting in an entrepreneurial role outside the established socio-political power hierarchies. Of the situation in the Late Iron Age Wells writes:

> European society was becoming an industrialized one, with even the small, outlying communities playing active roles in the production and circulation of materials for growing trade systems. The emphasis of cultural life had shifted from interaction within the small community (characteristic of the earlier centuries of the Iron Age), to increasing production in order to participate in expanding commercial networks. Individuals joining in the manufacturing process at the new centres - and in the countryside as well - were stimulated more by the prospect of sharing in the new wealth, in both imported exotic items and in locally made luxuries, than by the prospect of reinforcing their status through the traditional means. The growth of commerce, development of larger scale industry and increase in intercultural interaction during the latter parts of the Iron Age brought about profound cultural changes, including change in peoples' expectations, aspirations and outlook. The new emphasis at the oppida on the industrial production of tools was both a result and part of the cause of these changes' (1988:214-5).

Wells' view that the appearance of the oppida is part of a change in the organisation of society is, at one level, undeniable. Whether it represents the change in the social relations of production that he envisages is another matter. Wells has used early 19th century America as an analogy for the situation in Europe during La Tène C - D1:

> 'In both the Late Iron Age and early 19th century America, a set of economic and commercial circumstances offered opportunities for new patterns of industrial activity in the context of a loosely structured, relatively non-hierarchical social system. In both instances, the new industries resulted in great increases in production and in the formation of new commerce based communities' (1987:409).

The implication of this view, together with Wells' frequently stated suggestion that the entrepreneurs who initiated the economic change came from outside the traditional elite group (eg 1984:25), is that there were fundamental changes in both the relations of power and the social relations of production in the Later Iron Age. In chapter 2 I shall consider the archaeological evidence for such changes in social and economic relationships in Central Europe and evaluate Wells' views in more detail. As a background to this evaluation his premises, and in particular his analogy with 19th century America, require consideration.

The early settlement of America is without doubt a complex subject, given the variety of places of origin of the settlers, the forms of social and political organisation that they brought with them and the relationship of the emerging nation with those in Europe. With the exception of certain cases (notably religious communities) there cannot be said to have been a radical change in either the forms of economic organisation or the social relations of production. These had been established by the changes that constituted the Industrial and Agrarian Revolutions in Europe, both in terms of the specific forms of the organisation of production and in the earlier changes in society and the economy that established the existence of venture capital and the banking and financial infrastructure that supported both the establishment of industrial capitalism and European imperial expansion. The American situation is better seen as the result of the creation of new markets which were served first by European, and later by newly established, colonial, manufacturers. No significant economic change was involved as the basic structure of capitalism was already in place in Europe, its transfer to America being a largely logistical matter. If any period of American history is likely to show distinctive economic forms it would be the period of earliest settlement when contact with Europe was less frequent and communities relatively isolated. Such a period however would have been an essentially transitional and small scale one. It had certainly ended by the early 19th century.

Though it seems inherently unlikely that useful analogies for the later Iron Age can be found in the variant forms of capitalism that may have existed in the American early colonial period, Wells' work does raise certain questions that should be posed when considering the data. If it is true that the establishment of the oppida and associated manufacturing industry are an aspect of an economic change linked to the

employment of some equivalent to venture capital (whether this involves 'nouveau riche' capitalist entrepreneurs or not), then we are dealing with a social change of a most profound nature, and one that would certainly have involved the appearance of new relations of power. In this context the value of Wells' formulation has to be questioned. The explanation of the change in terms of the activities of entrepreneurs sidesteps issues of the wider social context of entrepreneurialism, and in particular its relationship to pre-existing power structures. Wells' comment

> 'The existence of ... aristocracies and of chieftains was not an important factor in the rise of towns and cities. It was not the traditional sociopolitical hierarchy that lay behind the formation of commercial centres at Hallstatt, Stična, the Heuneburg and Manching, but rather enterprising individuals who perceived opportunities and took chances on gaining profits in the expanding commercial networks' (Wells 1984:25)

is ultimately unconvincing. Even given that the activities of entrepreneurs were responsible for the rise of the 'towns', the suggestion that such a development could take place without the involvement of the 'traditional sociopolitical hierarchy' is scarcely credible, particularly in the absence of any mechanism for the by-passing of this hierarchy. A scenario in which a traditional aristocracy is challenged by a new class of entrepreneurs gaining power and wealth through the control of trade is one in which factional struggles of an extreme and possibly bloody kind would be expected, in complete contrast to the amicable situation envisaged by Wells.

If Wells' highly contentious claim that entrepreneurialism is a fundamental human attribute (1984:30) is accurate, then the task of the analyst is to examine the particular historical forms which it assumes and to investigate the nature of the tensions that arise as it comes into conflict with pre-existing power structures, and not simply to advance it as an independent 'prime mover' driving society towards capitalism. To do so seems to represent a return to the days of monocausal explanations for complex social phenomena, replacing the fashionable causes of the 1960's and 70's (such as population pressure), with a new causal agent more in tune with the social and political environment of the mid 1980's (Champion 1987, Collis 1986).

Even given these flaws in Wells' analogies and in his conception of social dynamics, a number of questions remain that should be tackled through the data.

As with Nash's work the question of the importance of trade with the Roman empire is fundamental. The model stands or falls on the evidence of an interaction with the Mediterranean so intense as to provide a raison d'etre for the existence of major urban centres, for an expansion of craft and

proto-industrial scale production and for exchange networks extending from these centres into the countryside (1988:214-5). These aspects will be evaluated in the conclusion to chapter 2, following a discussion of the Central European data.

1.5 Patronage and proto-feudalism.

In complete contrast to Peter Wells' approach to the period a recent debate, conducted largely in the pages of the journal Man, has been concerned with the nature of economic analysis as applied to later European prehistory (Gosden 1985, 1986a, 1987a, 1989, Rowlands 1986, 1987a, unpublished, Bradley 1985). Briefly restated, this debate has concerned the applicability and role of ethnographic analogies as applied to the European Iron Age and the level at which it is possible to generalise from particular case studies. The direction taken by Gosden diverges significantly from that taken in the cases described above and from that of the other main protagonist, Rowlands. Gosden's adoption of a position based upon a central concern with the production and circulation of goods will be discussed in detail in chapter 3, as it has been influential in the formulation of the position taken in the current case study. Rowlands' approach, in contrast, is closer to those described above in the analogies and concepts chosen to illuminate and describe the Iron Age situation.

In opposition to an approach to the past which focuses on the organisation of production and exchange and the relationships existing between them, Rowlands has argued for a point of view which strives to avoid what he terms 'modernist fantasies' (1986:746). He includes the distinction between gift exchange and commodity transaction (described in chapter 3) and (apparently) between production and circulation amongst these 'fantasies'. Speaking from the perspective of one who has

> 'a personal commitment to elucidate difference through comparison and generalisation' (1987a:559)

he rejects as relativist and historicist those interpretations which emphasise such fantasies. In an unpublished paper he concludes that, rather than attempting to understand the economy in terms of production, circulation and consumption, a more profitable line of enquiry would be to seek for the

> 'origins of feudalism as a type of social structure' (unpublished:7)

and to understand the

> 'social dominance of a warrior aristocracy organised through dependant ties of vassalage' (unpublished:7)

Once again a 'Celtic' Iron Age is evoked (albeit implicitly), based upon Classical literary sources and upon a view of the period as ancestral to Medieval feudalism. It is difficult to understand how, when starting from such a position, he is able to criticise Gosden and Bradley for indulging in 'modernist fantasies'. That their analyses involve discussion of the nature of the economy rather than the role of warfare in the establishment and negotiation of social relationships (Rowlands unpublished:6), hardly seems to provide sufficient grounds upon which to condemn them as fantasies. Indeed the contrary is perhaps true. An analysis which takes as its starting point the historical specificity of a given social formation (as Gosden's does), while there will ultimately be no way of demonstrating its status as objective truth, is inherently less likely to be 'fantastic' than one which takes as direct the links between the social formation in question and one which existed four to five hundred years later.

The fetishisation of the 'Celtic Warrior', present in the work of both Nash and Rowlands, represents the worst kind of fantasy (modernist or otherwise) applied to prehistory, being androcentric, militaristic and repressive, denying both a history and an effective role to the majority of the population and evading such fundamental issues as the nature of economic organisation. I do not deny that status, symbolised in ways related to military prowess and by associated forms of display, seems to have had an important role in the power structures within Iron Age society. The importance of weapons and military paraphernalia in various burial rites during the period clearly indicate the importance of such concerns. To take this single aspect of society and to grant it a position of privilege with regard to others, without considering either the nature of the social formation and the relationships existing within it or the ambiguous nature of funerary display is, however, both methodologically and intellectually questionable (Owoc in prep., Parker-Pearson 1982). In a British context, for example, recent reviews have suggested that the designation of Iron Age hilltop enclosures as 'forts', in a sense implicitly derived from medieval castles, has impeded their interpretation in terms that do justice to other aspects of their character (Bowden and McOmish 1988, 1989, Hill unpublished). Similarly, to designate European Iron Age society as a proto-feudal or 'Warrior society' without exploring issues such as the form of the economy, the role of context-specific symbolism in funerary ritual, or the nature of the settlement pattern is to impose upon that society, a character defined, if not by fantasy, then certainly by misplaced analogy.

A concern with economic issues need not, and should not, ignore 'the growth of a warrior aristocracy', if such an institution exists, or 'the political dimension' of society (Rowlands unpublished:6), but, on the contrary, should address such issues at a fundamental level. What is urgently required in the

Central European context however, are not more generalised statements about warrior aristocrats or relations of clientage, but rather detailed studies of, on the one hand forms of economic organisation throughout the period and, on the other, of the symbolic statements contained within the rich mortuary traditions of La Tène B and C. The constraints of time and space preclude an analysis of the latter here, (though some observations will be presented in the final chapter), and limit the former to a particular case study.

1.6 Multifactoral approaches.

In contrast to Wells, Nash and Rowlands other writers have drawn attention to the variety of factors and the complexity of their interrelationship operating in the later Iron Age. Collis, in his account of the oppida (1984b), has suggested a number of different trajectories which could have been followed under different circumstances. In doing so he gives extra weight to the defensive nature of the oppida, but sets this within a wider context of exchange (both local and long distance), production and political functions. The need for defence is seen as a stimulative rather than a causal factor, acting upon trends that were already established (1984b:83). The strength of Collis' approach is that in attempting to present a full picture of the diversity of nucleated settlement, both in origin and in final form, he does not close off avenues of research in the way that the writers discussed above tend to do. Possibilities remain open to investigation, and areas of obscurity and confusion are highlighted. The corollary of this is that no comprehensive theory to account for various phenomena is postulated, rather lines of approach are suggested, a position in line with his background as

> 'a prehistorian ... with a grounding in geography and anthropology rather than the traditions of Mediterranean archaeology' (1984a:10).

A constant theme underlying Collis' writing is the lack of detailed survey of specific aspects of the archaeology of the Later Iron Age which would allow evaluation of the various possibilities that he presents (1987c). Indeed it was this very point that prompted the present study.

A similar multicausal approach is presented by Champion, Gamble, Shennan and Whittle (1984), who stress the roles of both internal and external factors in the increase in socio-political complexity during the last two centuries BC (1984:316). The great strength of these approaches is their ability to deal with regional diversity and to structure approaches to fieldwork that focus on regions rather than individual sites. This contrasts with the more rigid position exemplified by Wells, Rowlands and Nash

who, having a predetermined explanatory framework, must seek support for it. The contrast is clearly visible in the fieldwork projects undertaken by Collis and Wells. Whereas the one seeks to investigate regional interrelationships at a variety of levels (Collis 1984c, Cumberpatch 1989), the other, following a well worn path, has concentrated upon single sites, the current example being the oppidum of Kelheim (Wells 1987).

1.7 Conclusion.

In this chapter I have set out the principal approaches which are currently employed in the study of the later European Iron Age. I have not discussed a number of recent case studies in which the writers have advocated approaches which respect the 'Otherness' of the Iron Age (Hill 1989, unpublished, Barrett 1989, Bowden and McOmish 1989). Though these may yet become influential, they have not as yet made any significant impact upon the study of the European material, and remain, at present, an insular development.

I have raised a number of issues which require evaluation with reference to the archaeological data from the case study area. In the next chapter I shall present a synthesis of the information available which will both allow such an evaluation and will also form the background to the remainder of the case study.

Chapter 2.

Settlement, economy and society in the Later Iron Age of Central Europe.

In this chapter the archaeology of the case study area will be described from the point of view of the different types of site and the evidence for their roles in the society and economy of the Later Iron Age (La Tène C - D). For the purpose of description the study area will be divided into three parts, defined on the basis of the form of the major settlements. These parts are broadly Bohemia and Moravia, Slovakia and Transdanubian Hungary, and Małopolska, though the modern administrative and national boundaries do not coincide exactly with the apparent prehistoric divisions. The area is shown in Figure 2.1, which includes the location of modern political boundaries and the principal towns. Figures 2.5, 2.6, 2.11 and 2.15 show the locations of the Iron Age sites referred to in the text. The opening sections of this chapter give a brief description of the geography of the study area.

2.1 Geographical background.

The area to be considered represents the northeastern edge of the distribution of La Tène material culture across Europe (Collis 1984a,b), and in particular includes the most easterly examples of oppida and the interface between this type of settlement and a related type referred to here as 'central sites'.

Throughout the thesis I shall refer to the area as a whole as 'Central Europe', following a definition of Europe that includes the Baltic states, the Ukraine and Bielorussia.

2.1.1 Czechoslovakia.

Bohemia, the westernmost part of Czechoslovakia and of the study area is primarily a shallow basin surrounded by mountains that constitute the historical, as well as the geographical, boundaries of the area (Demek and Střída 1971:29). The basin is drained by a number of rivers, notably the Vltava and Berounka which join the Labe (Elbe) near the modern town of Mělník and drain northwards into Germany between the Krušne Hory and Sudeten mountains (Figure 2.1)

To the west of the Labe, between the Krušne Hory mountains and the Ohře river lies the area defined as northwestern Bohemia. This area may be divided into two parts, the Krušne Hory (or Ore Mountains) themselves and a series of basins to the south. The mountains offered few opportunities for agriculture in prehistory (Gosden 1983, 1985), but were important sources of metal ores, including iron, lead, copper, zinc and tin (Demek and Střída 1971, Taylor 1983, Bouzek, Koutecký and Simon 1989).

The main areas of prehistoric settlement were the fertile basins, notably the Most basin with its loess soils (Waldhauser 1986b). Extensive opencast coal mining in the area has provided an opportunity for archaeological research on an unprecedented scale (Černá 1987), the results of which will be discussed in more detail below.

Central Bohemia consists of a fertile plateau bounded to the north by the Ohře and Labe rivers and to the south and west by agriculturally poorer upland areas. Historically the area has been densely settled, the agricultural fertility being complemented by the natural communication routes represented by the Vltava and Labe rivers. To the south and east the generally poorer agricultural land is broken by more fertile basins, most notably that around the medieval towns of Strakonice and Písek. The southern border is marked by the Šumava mountains and the Bohemian forest. Eastern Bohemia is occupied by the hills of the Českomoravske Vysocina, an apparently marginal area with minimal settlement in the prehistoric period. This upland area, as the name suggests extends into Moravia. The mountains form part of a major European watershed, from where the rivers flow either into the North Sea or eastwards into the Black Sea. Limestone deposits lie between the Českomoravske Vysocina and the Carpathians to east, producing areas of distinctive limestone (Karst) landscape. The principal areas of Iron age settlement lie in the catchment areas of the Morava and Dyje rivers (Meduna 1980a: Map 2). In the northern part of Moravia lies the Ostrava basin, a lowland depression connecting Moravia with Silesia and Małopolska.

To the east of Moravia, the Czech - Slovak border is marked by the Bilé Karpaty and Malé Karpaty mountains, which are the westernmost end of the Carpathian mountain range, which encloses Slovakia, Hungary and Transylvania. The mountains seem to have formed a significant cultural barrier, both in prehistoric and historic times, a division which will be discussed further below.

The southern part of Slovakia lies in the Danubian lowland, the most extensive lowland area in Czechoslovakia (Demek and Střída 1971:79). Tributaries of the Danube, notably the Váh, Nitra and Hron, have deposited extensive areas of alluvium across the plain, creating marshy areas (now drained) broken by natural levees. The northern edge of the lowland is marked by ranges of low hills, (the Trnava, Nitra, Žitava, Hron and Ipel hills) covered with loess deposits and alluvium from the higher mountains to the north. Both the Danube plain and the hills seem to have been areas of extensive settlement in prehistory, though, as will be discussed below, research has been patchy (Nitra 1981). The Carpathian

mountains, forming the northern part of Slovakia, are drained by valleys running southwards into the Danube.

The Eastern Slovakian lowland, lying between the Tatra and Carpathian mountains and the Soviet (Ukrainian) border is the most northerly projection of the Danubian lowland, comprised of the flood plains of the rivers Ondava, Tisza, Laborec and Bodrog.

The mountainous area of northern Slovakia is, strictly speaking, composed of many smaller sub-regions (Demek and Střída 1971:65-77). The general picture however is one of ranges of mountains rising progressively higher as one proceeds northwards, and culminating in the Vysoke Tatry, which form the border with Poland. Between the mountain ranges basins, such as the Liptov basin, and river valleys such as those of the Hron, offer areas more suitable for settlement and agriculture than do the mountains. Important sources of metals, including gold, silver, copper, lead, zinc and iron occur throughout the mountainous area and in the lower lying Spiš region to the east.

2.1.2 Małopolska.

The area of Poland included in the study area is that part of Małopolska lying between the Czechoslovak border and Kraków. The area is dominated by the Tatra mountains, from where rivers flow down to join the Vistula, which flows to the northeast before turning north towards the Baltic. In these conditions the environment has a varied character with a number of different soil types and ecological zones. Wielowiejski (1960) distinguishes two principal types, a 'steppe-sylvan zone' with loess or black alkaline soils and a forest zone with poorer soils and a cooler, wetter climate. The latter type is found principally in the higher mountains, those in the study area being the Swietokrzyskie and Tatra mountains. The majority of settlements with which this study is concerned lie in the valley of the Vistula, typically on terraces 100 - 300 metres above sea level, and are consequently sited so as to take advantage of a variety of ecological zones.

2.1.3 Transdanubian Hungary.

The area of modern Hungary lying to the east of the Austrian Alps and to the south and west of the Danube is known as Transdanubian Hungary and it was in this area that a fully La Tène material culture existed from about 400 BC until the Roman conquest in 12 BC.

Geomorphologically the area consists of a number of distinct zones. The following brief description is taken from *Geomorphological regions of Hungary* by Martón Pecsi (1970). In the extreme northwest of the country, between the eastern Alpine foreland and the Transdanubian mountains lies the Little Hungarian Plain. The area is crossed by the Rába and Lajta rivers, both of which join the Danube between Bratislava and Komárno. The plain, covered by alluvial riverine silts from the rivers which cross it and from alluvial fans originating in the mountains, bends westwards, narrowing as it reaches Komárno and is met by the northern foothills of the Transdanubian mountains (the Bakony and Vertes foothills). The Transdanubian mountains, made up of a number of geologically and morphologically discrete blocks, run southwest to northwest across Transdanubia from Lake Balaton to the Danube bend which separates them from the inner Carpathian range.

Lake Balaton itself occupies a basin between the Transdanubian mountains and the Somogy hills. The latter form the northern edge of the Transdanubian hills which occupy the southwestern part of the country almost as far as the Yugoslav border. Between Lake Balaton and the Danube, the Mezőföld represents an extension of the great plains, divided from them by the Danube and its wide (20 - 30km) flood plain. This latter feature, which begins immediately south of Budapest where the river leaves the constriction of the Danube gorge, was, until the historical period, an area of meanders, oxbows and marshes through which the river flowed in a number of channels. East of the river and its flood plain lies the Great Plain (Alföld). In the period in question this area was not occupied by users of fully La Tène material culture but rather by those identified as Scythians (Jerem 1985) with a material culture which shows a continuity extending back into the 8th century BC.

2.2 The archaeology of the Later Iron Age in Bohemia and Moravia.

Traditionally studies of the Late Iron Age occupation of this area, which today forms the westernmost part of the Czechoslovak Federal Republic, have stressed the role of the oppida over other aspects of the settled landscape (e.g. Břeň 1976, Wells 1984). Only in the last decade has it become possible to look at the oppida in a wider social context, with the publication of the results of large scale excavations on undefended sites and of the physical analyses of artefacts. This section will synthesise some of these results and will examine the changes and associated tensions within society which provide the context within which the slip decorated pottery was made and used.

2.2.1 Farmsteads and villages.

> 'The vast majority of people lived in farmsteads, hamlets and small villages, and their way of life determined the character of late Iron Age society' (Wells 1984:143).

Though Peter Wells fails to follow up the theoretical implications of this introductory remark in the subsequent chapter, it is nevertheless an important statement, and represents a point of view rather poorly covered even in recent literature on the Iron Age. As Bintliff (1984:162, 173) has pointed out, in a non-capitalist society the role of agricultural production is primary, and this emphasis on agricultural production provides a logical starting point for a description of Iron Age settlement.

North-west Bohemia is the area in which fieldwork has been most extensive and where we may have something approaching a reasonably comprehensive picture of rural settlement. The threat posed by lignite mining has resulted in extensive excavation and survey work which has produced a series of important publications (Gosden 1985, 1986, Waldhauser 1977, 1979, 1980, 1981, 1981a,b,c,d, 1984a, 1986b, 1987a,b, Waldhauser and Holodňák 1984, Černá 1987, Salač 1990a, b).

The area can be divided into two parts, the mountains, which were important sources of metal ores, but which were only sparsely settled in prehistory, and a series of river basins to the south, of which the most fertile and most densely settled was the Most basin (Gosden 1985). Settlement was densest in the Hallstatt D - La Tène A period, and during this period 85% of the known sites were located on loess soils. The remaining 15% lay on less fertile soils such as sandy clays. The majority were located between 180m and 330m above sea level. This pattern continued, albeit at a slightly lower density, into the Late La Tène period (Waldhauser 1976, 1986b). The settlement hierarchy, which was established in the Early La Tène, and continued, apparently with little change into the Late La Tène, was one of small villages with long sequences of settlement, with outlying farmsteads (Gehöftsiedlungen) occupied for shorter lengths of time. The most extensively excavated example is Radovesice (Waldhauser 1981b, 1987a, in preparation). The pattern was one of dispersed rural settlement with the villages acting as local foci for production and the exchange of goods (Waldhauser 1981b, 1984a, 1986b). The relationship of the villages in this area to the oppida which lay further south and to the undefended, nucleated settlement around Litomerice in the valley of the Labe (Elbe) is at present far from clear, though the evidence, which will be discussed more fully in section 2.7, indicates that complex exchange relationships were involved (Holodňák and Bareš 1987, Fröhlich and Waldhauser 1989).

Lacking the stimulus of large scale mining, research in other areas of Bohemia has been less detailed. At a regional scale settlement was concentrated in two principle areas, Southern Bohemia, (notably the Strakonice basin), and North-East Bohemia, particularly the valley of the Labe (Elbe), between the modern towns of Kolín and Hradec Králove. Both were regions of higher agricultural potential amidst relatively poorer areas, and were, in addition, sources of important raw materials (Waldhauser 1986a, unpublished). Sites such as Putim (Benes and Venclová 1980), Skaly (Fröhlich 1985) and the slightly earlier Zbudov (Michálek 1974) in the Strakonice Basin, conform in a general way to the pattern described for the northwest, as regards their relationship to the local topography.

In Moravia a similar situation seems to have prevailed. The evidence has been summarised by Meduna (1980 a, b), and his observations compare well with those of Waldhauser for northwestern Bohemia. The majority of undefended sites lay between 200 and 300m above sea level, close to water sources and on south or south eastern facing slopes. They occupied the higher quality land and though there was apparently some expansion of settlement in the Late La Tène, the poorer land remained unoccupied (Meduna 1980a:41). The basic unit of settlement was again the farmstead, a typical example of which is Kraskovice. This palisaded enclosure measures 77 x 92 x 82 x 74m and enclosed different types of buildings and other features, which presumably fulfilled the needs of the farm in terms of the buildings associated with agricultural production, and also housed those craft activities (such as spinning and weaving) which were organised at a domestic level (Meduna 1980a:43). Such farmsteads occur both in spatial isolation as well as in groups, forming villages. They also occur on oppida (notably at Hrazany and Staré Hradisko), and it is not unreasonable to interpret them as the spatial counterpart of a basic social unit.

Although the identification of animal bones is routinely carried out to the species level, relatively few reports give detailed analyses of the structure of animal populations or of depositional practices likely to introduce biases. Animal husbandry seems to have been based on cattle sheep/goat and pig, with other species (horse, domestic fowl, dog) occurring more sporadically (Waldhauser 1986b, Fröhlich 1985, Meduna 1980a, Čižmář 1987, 1990, Čižmář and Jelínková 1985). Wild animals appear on most sites and perhaps indicate hunting or trapping for fur (Zvelebil 1985). A study of pollen from Mistřin in southern Moravia suggests that there was an increase in pasture during the La Tène period, though the wider significance of this is at present not known (Svobodová 1989).

Details of crop husbandry are similarly vague, though the agricultural tools provide additional information. Plant remains suggest that cereals (wheat, rye, oats, barley and millet) were the most important crops followed by leguminous plants (peas, horse beans and vetch). Barker (1985) has suggested that the Late La Tène saw the introduction of a two course rotation system, which may have included the alternate growing of these species of plants. An intensification of agricultural production in the Late La Tène has been suggested by several authors (Wells 1984, Bintliff 1984, Barker 1985), and the appearance of new types of tools has been linked with this. Iron ploughshares are known from a number of sites including Brnícko, Jaroměřice nad Rokytnou (Meduna 1980a), Strachotín and Bořitov (Čižmář 1987, 1990) as well as from the oppida. The development of the iron ploughshare and possibly the coulter would have significantly increased the effectiveness of the plough on both heavier and lighter soils. The invention of the scythe, impossible to produce in copper alloy, increased the efficiency of the harvesting of both cereal crops and hay. The latter enabled more animals to be kept over the winter and increased the quantities of manure available for the fields. Barker has linked all these factors to a general increase in output during the last two centuries BC. A further technological advance was the adoption of the rotary quern, which is up to six times more efficient than other types (Waldhauser 1981a).

Two types of settlement were exclusively associated with agriculture and domestic crafts, the isolated farmstead, with a lifespan of one or two generations, and the village, some of which seem to have been occupied throughout the La Tène period. Agriculture was based on a mixture of animal and crop husbandry which, with the adoption of the scythe and the iron tipped plough, reached levels of productivity that probably remained substantially unchanged until the Agrarian Revolution of the 18th century. In the description of sites with other functions that follows, it should not be forgotten that they include a substantial agricultural component, alongside whatever other forms of production may exist.

2.2.2 Industrial villages and non-agrarian centres of production

Though there is considerable evidence that the oppida were centres of craft and industrial activity in the Late La Tène period, it is becoming clear that the sites which had fulfilled these functions in earlier periods, maintained a role alongside that of the oppida until the very end of the period. In this and following sections, I shall describe the nature of these sites and of the non-agricultural activities that took place on them.

The possibility of undefended sites being the location of production organised at a level of intensity greater than that of the domestic was advanced by Ludikovský (1964) on the basis of his observations of sites in Moravia. His identification of these sites as different from the standard farming settlements was based on their greater density of buildings, the form of these buildings and associated features and the position of the settlements with regard to agricultural land. He termed these sites 'non-agrarian production centres' (Ludikovský 1964:126).

Since 1964 the increasing numbers of published excavations has led to their identification elsewhere and the possibility exists for developing a more detailed picture than that possible with the handful of Moravian sites discussed by Ludikovský.

Though here considered as a single group of sites, there are indications of a considerable degree of heterogeneity within the class. At one extreme the complex of settlements around Lhotka nad Labem and Lovosice covers an area of between 50 and 70ha (Zápotocký 1973, Salac 1990b), while at the other there seem to be smaller sites no larger than the agricultural villages. These latter seem to represent the location of decentralised craft activities, amongst the most important of which was iron working. None of these sites have been more than partially excavated and consequently we have little idea of the extent of their internal complexity or of any differences that they may have from the agricultural settlements, other than the presence of industry.

Given the lack of waterlogged sites in the study area (Neustupný pers. comm.) there is an inherent bias in the record of craft and industrial production towards imperishable raw materials. Indirect evidence, in the form of tools and parts of tools, as well as analogy, points to the importance of crafts such as woodworking, textile manufacture, bone working and basketry. It is impossible however to assess the organisation of these branches of manufacture, or their role in the exchange system to any significant extent. Discussion of non -agricultural production must depend upon those branches employing imperishable materials, in this case ferrous and non-ferrous metallurgy, stone working, pottery and, to a lesser extent, glass. The evidence for such crafts will be presented in the following sections. A more detailed discussion of the organisation of production follows the discussion of the production of slip decorated pottery in chapter 4.

2.2.3 Iron production.

In spite of Tylecote's suggestion (1987:47), that the ubiquity of usable iron ore makes its local extraction and smelting viable over large areas of Europe, Pleiner (1980) and Filip (1976) have indicated that certain areas were preferentially exploited, an observation that seems to be supported by the occurrence of smelting debris (Salač 1990a). These are the iron rich areas of the Krušne Hory or Erzgebirge mountains in northwestern Bohemia, the Tatra mountains of northern Slovakia and the Holy Cross (Świętokrzyskie) mountains of Poland (the latter two will be discussed in sections 2.13.2 and 2.16). In addition Waldhauser has noted the potential importance of iron ore deposits in central Bohemia (unpublished:Figure 6). To the southwest of the study area the rich deposits of iron ore in Austria gave rise to a thriving iron industry, well known to the Romans, in the future province of Noricum.

Few mining sites are known from the Iron Age, largely because of subsequent mining activity in the same areas. Smelting sites are known however, as are the workshops of blacksmiths, and it is the location of these sites that will be discussed here. In theory the processes of iron production and their distinctive waste materials should make it possible to distinguish between smelting and working sites, if any separation exists. In practice of course the situation is invariably less clear, material from older excavations not having been recorded or recovered or having decayed since excavation. Detailed analyses of the nature of slag are rare, due largely to the cost involved.

The difficulties of transporting iron ore in a non-industrial situation make the smelting of the ore at, or near, the mining site the most practical option. Once the ore has been turned into ingots or blooms, it can be worked locally or moved to another site for processing by a blacksmith.

Iron smelting in Bohemia took place in a zone stretching from the Ohre and Labe valleys, immediately below the Krusne Hory, to the area immediately west of Prague, and apparently concentrated in the Ohře valley and the area around the modern town of Kladno. Industrial activity in this area was by no means limited to the production of iron, but it is clear that it was a significant feature of a number of industrial villages. These areas continued to play an important role in the production of iron in the early Roman period (Smrž 1979, Motyková and Pleiner 1979, Pleiner and Salač 1987).

Sites in the Ohře valley include Podbořany (Pleiner 1980, Pleiner and Princ 1984) dated to the late La Tène, Břestany (Salač 1984) dated to La Tène C1 - C2 and Radovesice 23 (Waldhauser 1974) dating to the Early - Middle La Tène. Podbořany and Břestany seem to have been primarily smelting sites with

slag pit furnaces of the type described by Pleiner (1980). Radovesice 23 consisted of a reheating hearth associated with blacksmith's tools and so seems likely to have been a forge. A crucible was found on the same site, indicating casting of non-ferrous metals. Holdňák (unpublished:appendix 2) has referred to iron working at Bžany (okr. Teplice) and Kadaň-Jezerka (okr Chomutov). Both sites are dated to the very end of the La Tène and the early Roman periods. In comparison with the relatively few sites upon which the remains of furnaces have been found, a far greater number have produced quantities of slag from the working of iron. Salač (1990a) has argued that these represent a more accurate picture of the distribution of iron working than do the remains of furnaces, given the greater chance of the survival of slag as compared to that of furnaces. In the area of his study, between the north bank of the Ohře, the Krušne Hory and the west bank of the Labe (Salač 1990a: figures 1 and 2), nineteen sites dating to between La Tène C2 - D1 have produced slag from iron working.

Moving eastwards, to the confluence of the Ohře and Labe rivers, a complex of sites has been found around the modern towns of Lhotka, Lovosice and Litoměřice (Figure 2.2). Occupation, dated to La Tène C2 - D1, appears to cover between 50 and 70 hectares, although the exact limits of the site are difficult to determine because of post-medieval and modern development. The site was recognised as having an unusual concentration of Middle La Tène cemeteries by Zápotocký (1973), and subsequent excavations have shown that the site was also occupied during the later period and was the focus for a wide range of industrial activities, as well as being involved in the exchange of goods (Salač 1990a,b, Fröhlich and Waldhauser 1989, Holodňák and Bareš 1987). A number of furnaces attest to the existence of iron working though published details are sparse. A number of the furnaces date to the early Roman period (Pleiner and Salač 1987), and seem to represent continuity of both occupation and of function.

To the north-west of Prague, around the modern towns of Kladno and Nove Straseci a cluster of sites have been found all of which have produced evidence of iron working, together, in some cases, with other craft activities. The distribution of the sites is shown in Figure 2.3. From the point of view of iron working the most important are Svaty Jan pod Skalou (Venclová 1982), which includes the earliest free standing shaft furnace in Bohemia (La Tène A); Tuchlovice (Sneidrova 1955), which includes Middle La Tène furnaces; Mšecke Žehrovice (Venclová 1989) with iron working dated to La Tène C1 - C2); Mšec (Pleiner and Princ 1984) with 18 furnaces, a roasting hearth and a forge dated to the end of La Tène C1 and Kostomlaty with 3 furnaces dated to the Late La Tène (Pleiner and Princ 1984). Closer to Prague the

Late La Tène site of Chýně includes the full range of facilities for the smelting and working of iron. A number of these sites were also involved in other branches of craft production, as I shall describe below.

These sites all have shaft furnaces for the smelting of ore and some also have facilities for the forging and secondary working of the iron produced in the furnaces. A second series of sites have only forges and blacksmith's workshops. Amongst these are Markvatice (Waldhauser 1975) in northern Bohemia, dated to La Tène C2 - D1, Žebetin and Velké Hosterádky in Moravia, dated to La Tène C - D (Ludikovsky 1964, Meduna 1980a, Čižmář 1984). With the exception of the latter two sites, and a quantity of slag from Bořitov (Čižmář 1990:313), the evidence for iron working in Moravia is generally poor. No smelting furnaces have been located, and although several sites have produced pieces of iron slag, this is from field walking rather than excavation. Iron objects are almost unknown from sites dating to La Tène A and B, though when they become commoner in La Tène C, the level of craftsmanship is not significantly different to that found in the rest of La Tène Europe (Meduna 1980a:155).

At present the better preserved and excavated sites in Bohemia and Moravia tend to belong to La Tène C2, but enough exist from the La Tène D to show that such sites continued in existence into the period of the oppida. A further indication of this is the existence in the same areas of iron working sites of a very similar nature in the early Roman period (Holodňák unpublished, Smrž 1979, Motyková and Pleiner 1979, Pleiner and Salač 1987), though questions of continuity do raise problems beyond the scope of this work.

In his consideration of the organisation of iron production in the Krušne Hory foreland (between the mountains and the Ohře river), Salač (1990a) has suggested that in this area, where no obvious central sites have been located, iron was smelted and worked by individuals, who, though skilled, were not full time specialists and who were also farmers. Such a model sees each village as relatively self sufficient in iron goods, few being exchanged between communities. Salač's case study is limited in range to the Krusne Hory foreland, and before it can be more widely applied requires further research in other areas. The homogeneity of material culture, which includes iron objects such as brooches, certainly implies a degree of interaction, and the concentration of iron working at sites such as Lhotka - Lovosice may indicate that there were areas in which there was specialisation of such crafts..

2.2.4 Non-ferrous metallurgy.

Though the importance of iron as the material for utilitarian items appears to increase throughout the La Tène period, non-ferrous metals (notably copper alloys, silver and gold) remain important for smaller items (such as brooches and jewellery) and for coinage.

The sources of non-ferrous metals are more restricted than those of iron, though in practice it seems that the areas which produced these metals were also important as sources of iron ore. Foremost amongst these were the Krušne Hory mountains in north-west Bohemia, which were also mined in the Bronze Age (Taylor 1983, Bouzek, Koutecký and Simon 1989). In Southern Bohemia the rivers flowing from the Šumava mountains were an important source of gold in the medieval period and seem also to have been exploited during the La Tène period (Kurnáč 1982). The principal sources are shown in figure 2.4.1.

The evidence for the smelting of copper has recently been reviewed by Waldhauser (1986a). Nineteen La Tène sites in Bohemia and Moravia have produced crucibles containing traces of copper or copper alloys (shown in figure 2.4.2). Of these, twelve can be dated to La Tène C - D. Five are oppida and the remaining seven are undefended sites. Waldhauser uses Radovesice as an example upon which to base an empirically derived model describing the process of smelting, manufacture and distribution (1986a:Table 4 and note 16). He sees a separation of 50 km between the sources of the ore and the sites upon which it was processed and cast. He suggests that the relatively small number of crucibles (numbers vary from single examples to 19 at Markvatice) indicates small scale, sporadic activity in the context of a rural society. An alternative view would be to see non-ferrous metallurgy as a branch of a more general craft of metallurgy, undertaken by smiths with a range of skills in this field. A number of sites, including Markvatice, Bořitov, Dřemcice (Lhotka-Lovosice), Radovesice (Čižmář 1990, Waldhauser 1986a: Appendix 4), which have produced crucibles for non-ferrous metals have also produced evidence of iron working. A similar form of specialisation within the craft might explain the production of those items, such as swords, which required the use of particular techniques and methods of production which were not generally known or practiced.

Typological analysis of copper alloy objects has been principally concerned with questions of chronology, though the potential for devising typologies of use in answering other questions has been demonstrated by Waldhauser's brief consideration of the copper alloy bracelets and Höhlbuckelringen

from cemeteries dating to La Tène B1 - C1. Though there is some overlap, regional variations in the form and decoration on the rings are apparent (Waldhauser unpublished: figures 8, 9, 1987: figure 10). These are most reasonably interpreted as the products of different workshops, responding to local demands. Whether these workshops, or others like them, continue into the later La Tène is not clear, and the implications of this will be discussed in the final chapter.

Direct evidence for the mining and working of gold and silver is generally poor. Kurnáč (1982) and Michálek and Fröhlich (1979) have reviewed the evidence for gold extraction in both the historic and prehistoric periods. Evidence for prehistoric activity is slight in the extreme, many sites being undatable (Michálek and Fröhlich 1979), and others, such as Kašperske Hory, lying under later sites (Waldhauser pers. comm.). The only site that can be dated unequivocally to the La Tène period is Modlesovice (okr. Strakonice), excavated in 1949 by the antiquarian Antonín Dubský.

In the case of coins, Nemeškalová-Jiroudková (1986) has noted that at least some of the metal used in native coins was derived from imported coins from the Mediterranean. Evidence for the working of gold is as sparse as is the evidence for its extraction. The site of Mistřín in southeastern Moravia has produced a crucible containing traces of gold, and a possible coin mould was found in a La Tène C context at Tuchlovice in Bohemia (Sneidrová 1955), but generally it seems that gold working is commoner on the oppida than on the undefended sites (Waldhauser 1986a), at least as far as can be deduced from the distribution of coin moulds.

2.2.5 Querns and stone working.

One of the few comprehensive programmes of physical analysis of archaeological material to have taken place within the study area has been that of the rotary querns (Waldhauser 1981a, 1981c, unpublished, Fröhlich and Waldhauser 1989). On the basis of both petrological and typological characteristics Fröhlich and Waldhauser have divided the querns into two basic types (1989:41), further subdivided on morphological grounds (Waldhauser 1981a). The first are carefully made and finished stones, originating either in the quarries of Oparno - Malé Žernoseky near Lovosice in northwest Bohemia or in the Kunetická Hory in northeast Bohemia (Waldhauser 1981a: map 2). The second type have rougher surfaces, are fashioned with less attention to surface detail and are made of local raw materials. The stone from Oparno - Malé Žernoseky (quartz porphyry) and from the Kunetice Hory (phonolite) is better suited to the requirements of quern manufacture than most other types of stone in

Bohemia, and, in consequence, achieves a wide distribution. The characteristics of this distribution will be discussed in section 2.7.1.

The production of the querns was a two stage process (Fröhlich and Waldhauser 1989: Table 1 and Figure 2). The first stage, at the quarries, involved the quarrying of the stone and rough shaping into disc shaped blocks. These were then transported to the masons workshops (a distance of 4 - 6 km) for final shaping and the drilling of the holes. This sequence has been most clearly demonstrated in north west Bohemia (Fröhlich and Waldhauser 1989: Figure 11). Here the quarries are found in two places, near the modern towns of Oparno and Malé Žernoseky. The stones were finished in workshops at Lhotka - Lovosice, the extensive settlement referred to above in connection with iron working. So far it has not been possible to demonstrate this pattern in the Kuneticka Hory, due primarily to a lack of research. As will be discussed in section 2.7.1, there seems to be a fairly regular fall-off in the occurrence of querns with distance from the sources, though this is distorted by an apparent inequality of access related to the size and function of the settlements.

Whereas northern Bohemian production was relatively centralised (though not to the exclusion of some local production), use of stone in southern Bohemia was more opportunistic (Fröhlich and Waldhauser 1989: Table 3). No production centres have been readily identified and at present it seems that production was locally based. It should be noted that there is a significant difference in the numbers of querns available for study. Whereas 135 are known from northern Bohemia, only 16 have been recorded from the south. Given more research it is quite possible that the picture will change.

The production of sapropelite bracelets and rings, ending as it does in La Tène C1, provides further evidence of the organisation of production in the pre-oppidum period. The bracelets, made of a soft and easily worked black stone (sometimes referred to as shale or lignite), originate in an area northwest of Prague around the modern town of Slaný (Rochna 1961). According to Waldhauser (unpublished) 23 sites in this area have produced evidence of the manufacture of these objects, in the form of the waste material and half completed examples. The workshops are located at varying distances from the source raw material, the maximum distance being 9 km (Figure 2.3). The workshops are located in village sized communities which are also active in the smelting and working of iron. They include Mšec, Mšecké Žehrovice and Tuchlovice (Pleiner and Princ 1984, Venclová 1989, Sneidrova 1955).

2.2.6 Pottery production

In chapter 4 I shall consider the organisation of the production of slip decorated pottery in detail. In this section I shall review the empirical data relating to the production of pottery in general.

La Tène pottery in Central Europe has, as in other areas, attracted a great deal of archaeological attention, the bulk of which has been directed towards chronological and typological ends. There have traditionally been few programmes of analysis aimed at gaining an understanding of either the methods or the organisation of production and exchange, though recently moves have been made in this direction (Wirska-Parachoniak 1980, Gosden 1983, 1987b, Jerem 1984a,b, Jerem and Kardos 1985, Kardos et al 1985, Molak and Illášová 1987, Holodňák and Bareš 1987, Cumberpatch and Pawlikowski 1988, Otava and Přichystal 1989, Nicholson 1989).

A synthesis of some of this work, together with a consideration of certain aspects of vessel typologies and the occurrence of kilns should allow a preliminary sketch of the general archaeological situation to emerge.

Gosden's analysis of the Early La Tène stamp decorated wares has minimal direct relevance to this study, but two important points may be abstracted from it. The first is the demonstration of the specialised nature of the production of certain types of pottery in the early period and the second, that social constraints may influence the adoption of new technology to a greater extent than will considerations of cost effectiveness or increased output (Gosden 1983).

Raw material sources and the procurement of clay and temper are obscure in all cases except that of the *Graphittonkeramik*. Because of the localised nature of the graphite sources and the importance of this type of pottery at Manching, it has been the subject of detailed investigation (Kappel 1969, Jerem and Kardos 1985), while domestic pottery and the normal range of fine wares have rarely been the subject of physico - chemical analysis. Where information is available it seems that local clays were exploited for local manufacture, but also that a certain amount of pottery was imported (Wirska-Parachoniak 1980, Otava and Přichystal 1989, Kardos et al 1985).

In the case of the *Graphittonkeramik*, the scarcity of the distinctive component of the clay body, graphite, makes determination of the source easier. Graphite sources are scattered and characteristic. The principle ones are found near Passau in Bavaria, in southern Bohemia around Cesky Krumlov, and in Lower Austria and southern Moravia (Kappel 1969, Jerem and Kardos 1985, Molak and Illášová 1987).

It seems that the graphite bearing clay, as well as finished vessels, was moving over considerable distances (Collis 1984a,b), implying that the production of the vessels was somewhat less centralised than the raw material. A number of sites have produced lumps of graphite. These include Čataj and Bajc - Vlkanovo in Slovakia, Velké Hosterádky, and perhaps Vícemilice and Náklo, in Moravia, Acsa in Hungary and Wielicka in Poland (Ozdáni and Hečková 1987, Cižmár 1984, Princ and Skružny 1977, Woźniak 1970a, Meduna 1980a). The precise function of these lumps is unclear (the alternatives include temper or the debris from the cleaning of clay), though inevitably a connection can be made between them and pottery production, particularly when the site is known to be involved in such production, as at Čataj or when the material is crushed and resembles temper, as at Wielicka (Wozniak 1970a:268). Analysis of the graphite from Čataj has shown that it originated in southern Bohemia, close to Ceský Krumlov and the oppidum of Trísov. This is an area which is known to have been the source of much of the *Graphittonkeramik* in Bohemia (Waldhauser 1988 and Figure 2.8), but which is not generally believed to have been the source of the majority of that which constitutes Kappel's Eastern Group (1969:80-2), the sources of which lie in Lower Austria and Western Moravia.

Ethnographic observations indicate that the distances travelled to obtain temper differ only slightly from those travelled to obtain clay, normally between 1 and 25 km from the site of production (Arnold 1985:51). In the case of *Graphittonkeramik* however we seem to be dealing with a situation rarely found under modern conditions in which clay, graphite and finished vessels were all moving over considerable distances. The overall impression is that this movement of goods was dominated by finished vessels, but the widespread discoveries of pieces of graphite and of local vessel forms incorporating graphite temper indicates the extent to which raw materials were also in circulation.

In the case of Bohemia, Waldhauser (unpublished) has defined three zones spreading out from the sources of graphite clay in southern and eastern Bohemia. On sites dated to between La Tène B2 and D1 there is a steady decrease in the percentage of *Graphittonkeramik* in the assemblages from south to north (Figure 2.8). Though Waldhauser considers that it is more or less irrelevant whether clay or finished vessels were being traded, it seems that the pattern fits better with a trade in finished vessels rather than in clay, the latter perhaps being more likely to result in a pattern of local concentrations of *Grapittonkeramik*, breaking up the relatively regular pattern that is the actual case. The circulation of these vessels is considered in more detail in section 2.7.

Waldhauser (unpublished) has also considered the spatial variation in the distribution of other types of pottery. Typological analysis of five types of pottery, four utilitarian wares and fine ware lids, has resulted in the definition of three zones, two of which can be subdivided. These groups have been defined solely on the basis of vessel form and decorative characteristics, and it is impossible to determine whether they should be interpreted as the result of centralised production and subsequent exchange or as an indication of some shared tradition amongst a group of potters, the result perhaps of the movement of individuals between groups. Whatever the case the style zones are not mutually exclusive (Waldhauser unpublished: Figure 1) and considerable interaction between them is indicated. Salač (1990b) has demonstrated that similar style zones exist on a smaller scale within the assemblages of utilitarian ware in the foreland of the Krusne Hory in Northwestern Bohemia.

A considerable number of pottery production sites, as indicated by the presence of kilns, are known from the study area. A full list of these, and of sites with other evidence of pottery production is given in appendix 2. Of the sites with kilns, two have been dated to the Early La Tène (Radovesice and Dolní Brezany), while fourteen are datable only to the La Tène period in general. The remaining seven sites cover the period between 150 BC and the end of the 1st century BC.

In Bohemia and Moravia the oppida are notable for the few kilns that they have produced (section 2.5.5). This could be due to kilns being located in peripheral areas of the settlements, or even outside the walls, locations well attested ethnographically (Nicholson pers. comm). There are two problems with this explanation. The first is that the majority of later La Tène kilns which have been found on defended and undefended settlements do not appear to have been located in peripheral situations, and the second is that excavations on a number of oppida (including Hrazany and Třísov) have concentrated on peripheral locations, notably areas close to the ramparts and around the gateways, but have revealed no kilns.

The type of pottery fired in the kilns is difficult to determine. Reports of wasters are rare, and there is no necessary link between the material filling the kiln and that fired in it. The examination of the complete pottery assemblage from the site of Aulnat in central France has suggested that the larger and more utilitarian wares were fired under conditions unlike those to be encountered in an updraft kiln. If this is the case generally then it may be suggested that the kilns were used principally for the firing of finer wares (as Jerem (1984a) has claimed for the kilns at Sopron - Krautacker), and those which required a degree of atmospheric control to obtain the required result (burnished reduced ware, slip decorated

ware). A considerable amount of research is still required however before such an argument can be generally accepted.

Though, as mentioned above, the dating of the kilns leaves room for debate, it seems certain that a number were in use during the period of occupation of the oppida, which raises the question of the relationship between artisans active in the oppida and those in the undefended settlements. Once again detailed studies of the typological characteristics of the pottery and of the clays used are needed before such questions can be answered.

2.2.7 Other craft and industrial activities.

The evidence for other branches of production is beset by a number of problems. Apart from those associated with the perishability of materials, the dating of many tools (the only trace of many crafts) is difficult (Meduna 1980a:125), as is accurate determination of their function.

A number of crafts were common to sites of all types. These include spinning, weaving and carpentry, which seem to have been organised on a decentralised, domestic basis. In contrast there is some evidence of concentrations of crafts on a number of Moravian sites, which might be related to their function as centres of the production of certain goods. The sites of Křenovice and Mistřín have produced tools used in a wide range of crafts, including leather working, carpentry and bone working (Meduna 1980a:126-7, 1980b). Tools, debris from manufacture and features interpreted as having been involved in similar activities have been found individually on other sites, and their comparative rarity may suggest some degree of centralisation and specialisation (Ludikovský 1964, Meduna 1980a:127, Čižmář and Jelinková 1985).

The identification of glass workshops has proved particularly difficult and, as I shall describe in section 2.5.3, the best evidence has come from the oppida. Two large collections of glass objects have been found at Lovosice and Mšec 1 (Venclová 1990, Venclová and Salač 1990), which raises the possibility (though no more than that) of production on undefended settlements.

2.3 Castella (Hillforts).

Waldhauser (1984b) has suggested that in addition to oppida, another class of defended sites exists in Bohemia. These he has termed 'Castella', following the terminology adopted by Haffner (1977) for sites in the area around Trier. They are characterised as having an enclosed area of between 0.3 and 10

ha, of having ramparts either built or rebuilt in the La Tène period, of occupying naturally defensive positions and of having produced material dating to La Tène C - D1. He has suggested that they could have been the seats of local elites, and may have served to control trade routes and areas of valuable raw materials. There is of course no *a priori* reason why such sites should not exist. The enclosure of sites becomes important in the Late La Tène with the establishment of oppida and *Viereckschanzen*, (described below) and the distribution of the castella closely follows the distribution of these two classes of site. This relationship is illustrated in Figure 2.5.

Unfortunately the evidence deployed by Waldhauser in his claim to have established the existence of this class of site is not as full as it might be. Of the 18 sites that he claims as 'castella', only Sedlo (okr. Susice), Čertova Ruka (okr. Turnov) and Kolo (okr. Tynec nad Labem) have actually produced significant amounts of material dating to the Late La Tène. Two huts at Sedlo included red slip decorated pottery and an imported bronze cup handle (Dubsky 1949). Surface finds from Čertova Ruka included 2 fragments of slip decorated pottery (Waldhauser, Kosinna pers. comm.). Small scale excavations at Kolo have suggested the existence of Late La Tène settlement overlying a late Hallstatt site, and have lead the excavator to speculate on its significance (Sedlacek 1981). Of the others, Zvíkov is reported to include a house dating to La Tène B - C (Michálek 1978) and the remaining sites are regarded as doubtful by Waldhauser himself (1984b: Table 1). In the light of this it must be concluded that, though some of these sites were occupied during the Late La Tène, the nature of that occupation is at present obscure, and their role even more so.

2.4 Ritual sites.

Ritual sites in Bohemia and Moravia may be divided into two basic groups, those within oppida and those outside. Those recognised lying outside oppidum ramparts are all of the rectangular enclosed form known as *Viereckschanzen*. To date 13 have been identified in Bohemia and Moravia (though not all have been verified by excavation), and a possible candidate for the category noted in Hungary by Petres (1972). At least three were originally considered to have been temporary fortifications erected during the Thirty Years War, and it is possible that others are concealed by similar misidentifications.

The characteristics of this type of site have been discussed by Schwarz (1975), who has also plotted their distribution (1975: Figure 2), though omitting some of the Czech examples. The Czech sites form the easternmost edge of the central European group and are less densely clustered than those in southern Germany. Their distribution is shown in Figures 2.5 and 2.6, and details of each given in appendix 3.

In attempting to deal with ritual activity in the later Iron age, most authors have become entangled in attempts to reconstruct 'Celtic religion' and religious rites from later written sources and from information preserved by the eclectic religious practices of the Romanised inhabitants of the provinces. This, together with the tendency to relate features of society in temperate Europe to supposedly analogous ones in the Mediterranean world, has led, to description and explanation in terms derived from the Classical world. Thus Schwarz, while staying closer to the archaeology than some, has drawn parallels with Classical temples and has adopted the term '*Temenos*' to describe the *Viereckschanzen*. Such cross-cultural identifications (for they are more than comparisons) are predicated on an assumption of some basic similarity between Greek, Roman and temperate European societies which, it may be argued, owes more to the social context of nineteenth century thought than it does to the historical situation (Champion 1990, Cumberpatch in preparation). Such attempts are judged here to be misleading and discussion of the Czech *Viereckschanzen* in the present and final chapters will attempt to set them in their own specific context.

Four of the *Viereckschanzen* have been excavated (Kučeř, Kokrdov, Mšecké Žehrovice and Markvatice), though only the latter two have been published in any detail. Others have been identified and dated either during partial destruction or from fieldwalking. Drda, Waldhauser and Čižmář (1971) have suggested a general date of the mid 1st century BC for these sites, but subsequently the evidence

from the two excavated sites suggests that they were constructed in the 2nd century BC, (La Tène C1 - C2). Markvatice may have continued in use into La Tène D1 (Waldhauser 1975), but the date of the abandonment of Mšecké Žehrovice poses a number of problems, and may have occurred either during La Tène C2, at about the time that occupation began at Stradonice (Venclová pers. comm.), or later during La Tène D1 (Venclová 1986a, 1989).

As the name implies, the sites are quadrilateral enclosures, rarely regular, delineated by a ditch and bank. At Mšecké Žehrovice trenches below the ramparts suggested the existence of an early phase, possibly defined by a wooden palisade. The site is unique in the study area in being subdivided internally by a bank and ditch, which are the result of the addition of a northern section, representing the third phase of the site, to the conventional enclosure which overlay the timber palisade. (Venclová 1989:143, pers. comm.). Various features occur within the enclosures. In Southern Germany deep shafts containing deliberately placed deposits have been found (Planck 1982, Schwarz 1960, 1975) and similar features have been claimed to exist at Skřipel and Ludéřov (Drda et al 1971). They have not been found at either of the excavated and published sites. Both Mšecké Žehrovice and Markvatice contain structures associated with the use of the enclosed area (Waldhauser 1975, Venclová 1989). In both cases these are rectangular buildings consisting of an inner structure surrounded by a second less than a metre from it. In each case the inner building is positioned off centre, though they apparently co-exist. In spite of Waldhausers claim that the structure at Markvatice is an *Umgangstempel*, and the fact that the nature of the structures do superficially resemble this type of building, it is clear from the dimensions that the gap between the inner and outer walls is too narrow for the term to be applied in its strictest sense (Venclová 1989). A similar structure was found at Kokrdov, though precise details are not available (Waldhauser 1981d). In Southern Germany the site at Holzhausen also included a 'temple' which, as at Mšecké Žehrovice, overlay an earlier palisaded enclosure. There are further similarities between Markvatice and Mšecké Žehrovice, notably the presence of settlements situated some distance from the ritual structures. These settlements were of the normal domestic type, and included evidence of industrial activities. Whether other sites have similar associations, it is at present impossible to tell.

Finds from the Czech *Viereckschanzen* are sparse, particularly in comparison to ritual sites such as Gournay and Ribemont-sur-Ancre in France, and this has led the excavator of Gournay, Jean Louis Brunaux, to question the nature of *Viereckschanzen*, at least in France (Brunaux 1988:36). In fact, although the Czech sites lack the wealth of ritual deposits that characterise the French ritual sites, they

possess many of their other characteristics. Brunaux describes six elements which reoccur on ritual sites of the Belgic type in central and western Europe (Brunuax 1988:25-35. These are the enclosure, the entrance, internal pits and features, the 'temple', special deposits and the altar. Of these the enclosure, internal features and the 'temple' all have counterparts of equal importance on sites in Central Europe. Brunaux suggests that the *Viereckschanzen* were either the locations of a different type of ritual to that found in France, or that they were the location of activities of a more 'political' nature, such as tribal or other collective assemblies (1988:36). Given the present state of knowledge it is doubtful if these questions can be resolved adequately, and it is perhaps more important to try to devise other ways of approaching the sites than through the reconstruction of specific ritual or other practices.

In this context three issues stand out as important. The first is the relationship of the *Viereckschanzen* to contemporary settlements, the second, their relationship to non-agricultural production and the third, to pre-existing ritual activity (including burial).

Drda et al. (1971) have divided the *Viereckschanzen* into three groups, those lying within a defended area, those immediately outside an oppidum and those further away. With regard to the sites lying within oppida, more will be said below. The division of sites outside the oppida into two groups appears to be more or less arbitrary. The distribution shown in Figure 2.5 suggests that, although the distance of the *Viereckschanzen* from the various oppida varies, there is a spatial relationship between the two types of site. To some extent this depends upon the identification of Češov as an oppidum, an identification that is not without difficulty (section 2.5), but in spite of this the association is suggestive. It does not seem unreasonable to suggest that the construction of the two types of site was in some way connected. The emphasis on enclosure, hitherto a secondary consideration on both sacred and profane sites, provides a second connection between them. The chronological position is unclear. The almost complete absence of relevant finds makes the *Viereckschanzen* extremely difficult to date, even when, as in the case of Mšecké Žehrovice, they have been extensively excavated. It seems certain that they post date the inhumation cemeteries, and I would suggest that, though their construction begins before that of the oppida, they are in some way connected with them. I shall return to the nature of this connection in the final chapter.

The positioning of the *Viereckschanzen* is also related to undefended settlement, and a case can be made for the existence of a 'special relationship' with certain of the industrial villages. Both Mšecké Žehrovice and Kokrdov lie between the modern towns of Rakovnik and Kladno, in an area of relatively

intensive industrial activity. Although the production of sapropelite rings ceased soon after the construction of the *Viereckschanzen* (a few fragments were recovered from Mšecké Žehrovice), iron production seems to have continued into La Tène D. Although the enclosure at Mšecké Žehrovice overlies an abandoned section of an earlier (3rd century BC) settlement, it is not clear whether the whole settlement was abandoned, or whether part of it continued to be occupied. At Markvatice the *Viereckschanze* lay closė to an industrial village with evidence of blacksmithing and non-ferrous metallurgy, which continued to be occupied into La Tène D1. Other sites, in areas with limited survey and excavation, pose problems. Třebsko 2 lies close to an area with evidence of gold panning, and several sites are known from southern Bohemia, an area, as noted above, with a concentration of La Tène settlement and a source of gold throughout the prehistoric and historic period.

This relationship with settlement and industrial activity is not unambiguous. There is a marked absence of *Viereckschanzen* in northwest Bohemia and in southern Moravia. In the former case this is unlikely to be due to differential research as the area is one of the most intensively studied in Czechoslovakia. In the case of Moravia, it is impossible to be certain that the apparent distribution is a real one, though the surveys published by Meduna (1980a, 1980b) are both comprehensive and thorough.

With the possible exception of a small square enclosure at Závist, *Viereckschanzen* have not found within oppidum ramparts. Other types of features have been identified as ritual structures at Třísov and České Lhotice (Bren 1975, Princ 1986). At Třísov this takes the form of an octagonal building which overlooked the main area of settlement, and was enclosed by a shallow ditch. At České Lhotice a paved area was enclosed by a fence and contained a hearth. Within this 'sacred precinct' (Princ 1986:154) and resting on the paved area was a roughly carved stone head. This is one of a number of such heads from Czechoslovakia, the most famous being that found near Mšecké Žehrovice. A third stone head, somewhat less elaborate than that from Mšecké Žehrovice, was found at Závist in 1957, though, having been found on the surface, it has no secure archaeological context (Jansová 1966).

There are no real similarities between the *Viereckschanzen* and the ritual sites within the oppida other than the presence of enclosures, the forms of which are completely different. The stone heads are ambiguous, especially given the fact that the one from Mšecké Žehrovice is executed in a completely different style to those from the oppida (Megaw and Megaw 1988) and is only circumstantially related to the *Viereckschanze*. They cannot be taken as evidence of links between the two types of site. I would

suggest that these differences between the *Viereckschanzen* and the structures within the oppida are related to their rather different functions, though the precise nature of these functions remains obscure.

In the final chapter (section 6.2) I shall examine the possible nature of the relationships between the *Viereckschanzen*, the undefended settlements and the oppida in the light of the chronological and spatial links between the sites.

2.5 Oppida.

Eight oppida have been identified in Bohemia and Moravia, with a further three possible in Bohemia (Figures 2.5 and 2.6). The easternmost oppidum is Plavecké Podhradie in Slovakia, though on the Moravian side of the Malé Karpaty hills. In Hungary only the site of Velemszentvid fulfils all the criteria for a true oppidum. Details of all the sites have been published, though in most cases final reports on the excavations are still awaited (Collis 1975, 1984b, Břeň 1966, 1976, Petres 1976, Meduna 1970a,b, Waldhauser 1979, 1984c, Motyková, Rybová and Drda 1982, 1986, Princ 1986, Rybová and Drda 1986, 1989, Drda 1987, Čižmář 1989a, b), and it is unnecessary here to give detailed descriptions of each site. Some attention will be given to the doubtful sites as their correct identification affects the interpretation of the situation.

The chronology of the oppida can briefly be summarised. The Central Bohemian and Moravian sites (Stradonice, Závist, Hrazany, České Lhotice, Staré Hradisko and possibly Hostýn) were founded in La Tène C2, in the mid to late second century BC. The reoccupation of Závist followed a hiatus in the use of the site, which was intense throughout the Late Hallstatt and Early La Tène periods (Motyková, Drda and Rybová 1984). The southern Bohemian sites, Třísov and Nevězice were established somewhat later, probably around 60 BC. Plavecké Podhradie in Slovakia was abandoned relatively early, during the 1st century BC, having been founded in the 2nd century BC (Pieta 1981). Velemszentvid has a more complex history, apparently having been occupied during the Late Hallstatt and throughout the La Tène period. It was abandoned during the 1st century BC, to be reoccupied in the early medieval period (Collis 1975, 1984b, Fekete pers. comm).

The three controversial Bohemian sites, Uhost in the northwest, Češov in the northeast and Tábor in the south, have all produced Late La Tène material, principally pottery, though in relatively small quantities. The debate over the northern sites, and particularly Úhošt, has hinged on a discussion of the ethnic affinities of the settlements in the area, and the possible movement of 'Celtic' and 'Germanic'

populations during La Tène D (Waldhauser 1983, Koutecky and Venclová 1979). Salač and Smrž (1989) have specifically rejected the identification of Úhošt as an oppidum on the grounds of the ambiguity of the evidence in the field, a pragmatic argument that must carry more weight than the argument from ethnicity. The identification of Češov is similarly problematic, as the La Tène phase is overlain by a Slavic settlement (Waldhauser 1970). The presence in the neighbourhood of three *Viereckschanzen* (Češov 1 and 2 and Markvatice), does however provide support not present in the case of Úhošt. The site of Tábor is even more obscure (Waldhauser 1984b), but presents less of a theoretical problem than the two northern sites, lying as it does in the midst of the 'classic' oppida, and overlooking a major tributary of the Vltava. Clearly all three sites require excavation to resolve the matter. The working hypothesis adopted here is that Češov may well have been an oppidum, while Úhošt and Tábor remain doubtful.

Settlement within the oppida shows many parallels with that on the undefended sites, being based upon the palisaded enclosure, which incorporated domestic, agricultural and other buildings, including workshops of various kinds. The clearest examples of these enclosures are from Hrazany (Jansová 1965, Collis 1984b: Figure 8.9) and Staré Hradisko (Meduna 1970a, Collis 1984b: Figure 8.10).

That agriculture was an economically significant activity for the inhabitants of the oppida is indicated by the finds of agricultural implements. These include ploughshares, scythes and sickles. Unfortunately there have been no detailed studies of the plant or animal remains such as those carried out on British hillforts such as Danebury (Cunliffe 1983). This makes it difficult to assess the relative importance of agricultural production carried out by the inhabitants of the oppida, as opposed to products imported in a refined or semi-refined state from the surrounding settlements. Crop processing activities were certainly carried out on the oppida, as the presence of querns indicates, but beyond this it is difficult to draw secure inferences.

Bintliff (1984) has emphasised the prime role of elite control of land and agricultural produce in non-capitalist societies and, in the context of the oppida, states that

> 'They should be considered primarily in terms of their central role to districts of notable fertility and dense population. In this respect we should pay far more attention to the signs of the importance of land and local agricultural products to these regional foci' (1984:172).

While the logic of his argument regarding the importance of agricultural production cannot be denied, the positioning of the oppida with respect to agricultural land in Bohemia and Moravia is not the central one that he predicts. Rather they lie on the primary trade routes (section 2.7.2) and are peripheral to areas of

higher agricultural potential. This is not to deny the importance of the control of agricultural production, but rather suggests that the situation is a more complex one than Bintliff envisages, and may indicate that the indirect control of agricultural production via the circulation of goods was of greater significance than the ownership of land in the modern sense. The concept of ownership advanced by Bintliff (1984:173), based on formalised patron-client relationships, is one that owes more to the influence of studies of the Classical economy than it does to an analysis of the situation in the later Iron Age in temperate Europe. While it cannot be rejected solely on these grounds, other explanations should be considered.

2.5.1 Metallurgy.

The role of oppida as centres of craft and industrial production has been extensively considered in recent reviews (Collis 1984b:87-102, Wells 1984:143-183). All oppida so far excavated have produced evidence for the production of a wide range of the artefacts found on Later Iron Age sites. Whether production was any more intensive on the oppida than in the undefended sites (earlier or contemporary) is a difficult question to answer, but a crucial one if we are to gain any deeper understanding of their role in Iron Age society.

Oppida with ramparts of the *Murus Gallicus* type (restricted to Western Europe) clearly demanded supplies of iron nails on a scale hitherto unprecedented (Collis 1984b:87), but whether this points to a general expansion in iron production, or to *ad hoc* arrangements, it is difficult to tell. The only statistical information available which relates to the production of iron is that presented by Salač (1990a), which is based on an analysis of metal working sites in the Ohře valley and the foreland of the Krušne Hory. Salac has suggested that there has been a systematic underestimation of the amount of iron in use during the late Hallstatt period and that it was in this period, rather than during the Late La Tène, that there was a significant expansion of iron production. The suggestion is an interesting one in view of the fact that there is, as yet, no quantified evidence to show that iron working on the oppida was any more intensive than it was on undefended sites.

Certain of the oppida do appear to be located so as to take advantage of raw materials, including iron ore. Outside the study area this is very clear at a site such as Kelheim, with its numerous quarry pits (Wells 1987). In Czechoslovakia iron working took place on most of the oppida, České Lhotice, Stradonice, Hrazany, Závist and Staré Hradisko having produced blacksmith's workshops (Meduna 1970a:51, Motyková, Rybová and Drda 1978, Princ 1986:152, Rybová and Drda 1986:147, Jansová

1986:71). Both Plavecké Podhradie and Hostýn have produced hoards of agricultural tools (Collis 1984:92). Unequivocal evidence of smelting is rarer, and, although the oppida lie close to certain iron ore sources, they are absent from some of the richest areas, including the Krusne Hory.

As on undefended sites, non-ferrous metallurgy is represented on the oppida by moulds and, more commonly, crucibles. Waldhauser (1986) cites material from České Lhotice, Staré Hradisko, Stradonice, Hrazany and Závist. In the cases of Ceské Lhotice (Princ 1986:153), Staré Hradisko (Meduna 1970a:51), and possibly Hrazany (Jansová 1986:71), the remains of non-ferrous metallurgy are closely associated with those of iron working. The bulk of the finds from Stradonice are without a reliable context, though recent rescue excavations (Rybová and Drda 1989) have established that copper alloys were being worked from the earliest phase of the occupation of the oppidum. This pattern of association reinforces the suggestion, made above, that metal working should be seen as a single craft, rather than one subdivided according to the different metals involved. There is no indication that the scale of production on the oppida was any greater than that on the undefended settlements, numbers of crucibles from industrial villages and oppida being equal (Waldhauser 1986a: Table 3), though more precise quantification is required before this can be taken as a general assumption.

2.5.2 Stone working.

Stone masonry does not appear to have been a commonly practiced craft in the Late Iron Age and objects of dressed stone are rare, the principle exception being quernstones. The production of these in northern Bohemia was described in section 2.2.5. Stones from these sources form 38.8% (seven querns) of those found on the oppida (Hrazany, Stradonice and Závist). The remainder are made from other raw materials, the majority (nine querns, representing 50% of the total) from granite. As yet no site has been identified as the source of these stones. The fact that 43.75% of the querns (seven examples) on the undefended settlements in southern Bohemia are also made from the same granite, and that it is absent from northern Bohemia points strongly to a southern Bohemian source, but there is no evidence that this is in any way connected to the oppida (Fröhlich and Waldhauser 1989).

The use of stone for building (apart from the packing in post holes and the surfacing of some roads) is apparent only in the revetting of the ramparts. The quality of this work is not easy to judge. In some cases (such as Mont Beuvray in France) the long term stability of the work has been called into question (Ralston pers. comm.), and the apparently frequent rebuilding of oppidum ramparts over their

relatively short history (Princ 1986, Břeň 1966:43) may suggest either that the enthusiasm of the builders exceeded their technical skill, or, more plausibly, that long term stability was of secondary importance. The latter seems to be confirmed in the case of Třísov by the occurrence of facing stones set on their edges into the outer face of the rampart. Břeň (1966:40), describing this feature, notes that it contributed nothing to the structural stability of the wall, and in fact may have been unstable. Břeň's interpretation is that the feature served to make the rampart visually impressive, giving an appearance of a massive stone construction. In some cases effort was taken over the procurement of the stone, that in the ramparts at Nevezice, for example, having been transported from a quarry several kilometres away, in spite of the presence of local material (Drda 1987). Such evidence might suggest that the act of building was significant in its own right, and that it should not be seen as a purely functional activity.

Princ (1986) has suggested that small scale working of shale may have taken place at Ceské Lhotice. No certain products of this activity have yet been identified however, and the suggestion is based on the occurrence of flat discs of lignite (1986:154). Similar flat discs, of soft laminated stone (shale?) have been found at Velemszentvid and are apparently stone counterparts of the enigmatic pot discs which are widespread on Late La Tène sites of all types.

2.5.3 Glass production.

Glass items, both imported and locally produced are known from sites dating to all phases of the Iron Age. After an apparent decline during La Tène B, the quantity of glass in circulation increases substantially during La Tène C1 (Venclová 1990:163). Typological analysis indicates two source areas at this time, west central Europe (possibly Switzerland) and south-west Slovakia, though no production sites have been positively identified. Production reached a peak, in terms of both quantity and diversity of artefact types during, La Tène C2 and La Tène D. There appear to have been a number of production centres within, or close to, the study area (Figure 2.7). These were Stradonice (Collis 1984b, Venclová 1986b, 1990), Staré Hradisko (Meduna 1970, Venclová 1990), Manching (Kunkel 1961), and perhaps Velemszentvid (Collis 1975). Only Stradonice has produced raw glass which analysis has confirmed as being identical in composition to that of La Tène artefacts (Venclová 1990:145). The role of other sites has been inferred on the basis of typological criteria. Fragments of unworked glass from Manching, Staré Hradisko and Velemszentvid await analysis. Venclová has suggested that Stradonice, Staré Hradisko and Manching served central and northern Bohemia, Moravia and southern Bohemia respectively, though

further analysis of the composition of the glass is required to substantiate this suggestion. There is still a possibility that other sites, some of which have produced large collections of glass artefacts (Mšec I and Lovosice), were involved in production, as similar sites were in other parts of Europe (Venclová 1990:156). At present however the evidence suggests that the manufacture of glass objects was amongst the most centralised and specialised of any of the branches of craft production in the Late La Tène, and, as I shall discuss in chapter 6, in this regard it may offer certain parallels with the production of slip decorated pottery.

2.5.4 Pottery production

The evidence for pottery production within the oppida is sparse. Only five kilns have so far been found, four at Staré Hradisko and one at České Lhotice. Further details of these are given in appendix 2.

During my examination of the sherds of slip decorated pottery from Stradonice one vessel was found to have been deformed during the firing process (NM 104839). Several sherds exhibited signs of over firing, though in none of the latter cases were they sufficiently badly damaged to be considered as true wasters.

At first sight this situation may appear to be the result of differential recovery, either through chance (the area of excavation being small in comparison to the area of the oppida) or because the kilns were regularly located in some marginal area away from the domestic buildings (such as outside the walls or in separate industrial zones) which have rarely the subject of excavation. Such suggestions are, in practice, inadequate. It is true that the areas excavated are small in comparison to the internal area of the oppida, but the distribution of kilns and other industrial facilities does not seem to show the kind of strict zoning that would account for them having been regularly missed. The kilns found to date occur both in discrete industrial areas (České Lhotice) and within the normal multi-purpose palisaded enclosures (Staré Hradisko). The latter example also contradicts the suggestion that kilns are marginalised because of their potential as a fire hazard and a source of pollution as the enclosures also include the normal range of domestic functions. In addition metallurgy, an equivalent hazard, is common within settlements, both defended and undefended. Such marginalisation as does take place seems still to be bounded by the walls of the oppidum and has not escaped detection. Excavations at Hrazany (Jansová 1986, 1988) located areas of iron working close to the gates, though there was no trace of pottery kilns. The kiln at České Lhotice was in a similar industrial area, dominated by traces of metal working.

The absence of kilns does not rule out the possibility of pottery production altogether. The use of open firing techniques, bonfires, or more sophisticated clamps, are difficult to identify archaeologically. In section 2.134 I referred to the pottery assemblage from Aulnat in Central France study of which has suggested that it is unlikely that all Late La Tène pottery was fired in kilns. The relatively small size of the kilns found to date, compared with the dimensions of many utilitarian vessels would make kiln firing impractical in many cases. This is particularly relevant to the production of *Graphittonkeramik* vessels which is normally associated with the oppida of Třísov and České Lhotice (Bŕeň 1966, Princ 1986:149-50).

Because of its proximity to the sources of graphite rich clay, Trísov has generally been assumed to have been one of the major production sites, in spite of the fact that no direct evidence of production has been found there. When *Graphittonkeramik* is considered in detail, it is clear that it is unlikely to have been fired in an updraft kiln. The pottery is a grey or black reduced ware, fired in a carbon rich, oxygen deficient atmosphere (Kappel 1969:47). Rye (1981:100) characterises updraft kilns as being unsuitable for producing this type of atmosphere. It is probable that these graphite rich vessels, as well as other, larger, vessels were fired in clamps. Whether these firings took place on the oppidum or not is an open question, but clearly it cannot simply be assumed.

On the basis of petrological analysis of pottery from the Vorburg at Závist, Otava and Přichystal (1989) have suggested that at least four different sources of clay are represented within the assemblage. To what extent these represent different sources outside the oppidum, or the import clay onto the site is not clear, but both are possibilities.

2.5.5 Other craft and industrial activities.

Tools and waste products from crafts such as weaving, carpentry, joinery, bone and antler working have been found on many of the oppida. In his interim report on the excavations at Třísov, Bŕeň refers to over 600 complete or fragmentary iron objects which had been recovered by 1966. The majority of these which were identifiable and were not brooches, belt fittings or similar items, were tools, the numbers of weapons being low in comparison, a situation also found on the other oppida (Bŕeň 1966:127, Motyková, Rybová and Drda 1978). The majority of these tools were awls, knives, gouges, punches and needles, potentially representing a variety of crafts involving perishable materials. All of these have parallels on other sites, both defended and undefended, but in the absence of quantified and comparable assemblages

it is impossible to determine whether such crafts are represented to any greater degree on one type of site or another.

Collis (1984b:94) has suggested that carpentry, basketry and leather working may have been specialised crafts and hence centralised to some degree, and while this may be true, the presence on undefended sites of similar types of artefacts to those found on the oppida does not suggest that this centralisation was exclusive to the oppida.

The working of amber, imported from the Baltic, took place at both Stradonice and Staré Hradisko (Rybová and Drda 1989, Meduna 1970a).

2.6 Coinage and the minting of coins.

The study of coinage, both production and use, has long been the preserve of numismatists who have generally approached their subject from a standpoint methodologically and often institutionally separated from archaeologists working on other aspects of material culture (in Slovakia for example the vast majority of articles concerned with coins appear in the journal *Slovenská Numismatica* rather than *Slovenská Archaeológia*). Within this tradition analyses display a considerable amount of sophistication, but interpretation frequently remains rooted in a historical paradigm, which precludes any economic analysis in terms other than those derived from a form of intuitive neo-classicism.

The problems inherent in studies of Iron Age coinage have been summarised by Haselgrove (1987b, unpublished), and a number of the points that he makes in a southern English context are relevant to Central Europe. These concern both the organisation and control of production (1987b:28-9, unpublished) and the circulation, deposition and recovery of the coins (1987b:chapter 3), which can rarely be studied adequately using coins with no archaeological context. Collis (1971, 1981) has made similar points with reference to the European case, but to date analysis of the central European data has remained either purely numismatic in nature, or has employed the type of quasi-historical models which I have criticised in chapter 1 (Nash 1987b).

This section does not pretend to provide a comprehensive survey of the coinage of Bohemia and Moravia, but rather attempts to relate the evidence for production and distribution of coins to the other aspects of the archaeology.

The coinages of Bohemia and Moravia fall into the eastern half of Allen's Gold belt (1980:61), and as such are to be clearly distinguished from those of Slovakia which are predominantly of silver (Allen

1980:61, Nash 1987b:63). The chronology of the Bohemian and Moravian coins poses a number of problems the principle one being that the overwhelming majority of the coins have no reliable archaeological context, having been found as stray finds or in isolated hoards. What does seem to be clear is that while the earliest coins predate the oppida by between 75 and 150 years, the appearance of a number of variants, together with a general increase in the complexity of the situation, occurred in the later second century BC (Allen 1980:65, Nash 1987b:66), at around the time of the foundation of the first oppida.

The earliest coins are the Nike series (depicting a Figure of Victory and copied from gold staters of Alexander III) which were first minted in western Moravia and eastern Bohemia at the end of the third century BC (La Tène C1) according to Allen (1980:62), and somewhat earlier according to Nash (1987b:64). These were followed by other types, the Alkis series (starting in the second quarter of the second century BC (Allen) or at the end of the third century BC (Nash), and the Mussel series (ending in the mid second century BC according to Nash or around 50 - 40 BC according to Allen). These are accompanied by a number of variants, mainly of the Alkis type, which appear to be geographically restricted. Examples include the Boar-Warrior (Middle Labe (Elbe) valley and Saxony), the Running Man (Berounka valley) and a variety of staters and their sub-divisions which were also apparently centred on the valley of the Labe and Saxony (Allen 1980:64-65). Nash dates these series to the early second century.

During the second half of the second century the situation became more complex, with a number of developments based on the early series and on coins from further west (Nash 1987b:66) In the third quarter of the second century BC (La Tène C2) a rare series of staters appeared in central Bohemia, and which may have originated from Stradonice. These were based on the Mussel series, but display a greater degree of accomplishment in their execution. The designs include a serpent and an axe. In this respect they do not seem to have any great influence on the other coinage of the area. A group with a form known as the 'rainbow-cup' achieve a much wider distribution, based in Bavaria, but with examples occurring in central Bohemia (Allen 1980:66 - 67), and perhaps originating there (Nash 1987b:67). In addition to these local types some late Gallic coins have been found at Stradonice. Bohemian coins have been found in western Europe, early types on the Atlantic coast of France, in the Tayac hoard (Nash 1987b) while later types were more widely distributed. Some examples have also been found in Italy (Nemeškalová-Jiroudková 1986).

Nash, following Jansová (1974),has dated the end of coin minting to around 60 BC, when, she claims, there was a

> 'widespread social upheaval...due to the southward expansion of ferocious 'Germans' of whom even the central European Celts were afraid.' (1987b:67).

In the light of the dating of the foundation of the southern Bohemian oppida to around that time, their prominence in the subsequent 40 years and the apparent continuation of at least several of the older oppida until the final years of the century with no sign of violent conflict, questions must arise regarding the accuracy of this dating and the historical events surrounding it. The early date of the first coins indicates that there is no dependant connection between them and the oppida, but having said this, it is apparent from the distribution of the coins that they were of considerable importance to the inhabitants of the oppida. The simplest explanation is that Nash's dating of the end of the coinage and the end of the oppida is incorrect, and that the coinage, having been established during La Tène C, continued and perhaps increased in importance throughout La Tène D, ultimately disappearing at the same time as the oppida themselves.

The location of some of the mints for these coins are known from finds of coin moulds and dies. Details of these are given in Table 2.1.

Given the dating of the origin of the coinage, it is clear that the distribution of moulds and minting debris is biased towards the oppida for reasons other than those connected with the original situation. Only the example from Tuchlovice, dated to the Middle La Tène (Sneidrova 1955), represents what must have been a significant minting operation on the rural settlements, at least in the earlier period. In the absence of any evidence other than the Tuchlovice find, it is impossible to know to what degree this was centralised. As Collis has pointed out (1971), there is no *a priori* reason why coinage should be produced only under conditions of centralised political control. Other interpretations, predicated on different forms of social organisation and involving different degrees of centralisation are equally possible.

The various patterns of coin distribution described by Allen and Nash imply that a number of processes were involved in their creation. The apparently rapid change in the designs on the coins and the variety of local developments which they represent suggests that the forms of both production and circulation were in a state of flux throughout the period of their existence. In this they appear to differ from other types of material culture, including the slip decorated pottery and glass objects, though the lack of chronological detail regarding the circulation of these goods may be of significance in this

context. The relationship between the oppida and the coinage is clearly an important one, though ambiguous. Collis, for example, has suggested that the distribution of small silver minims in central Bohemia is related to the market area of Stradonice

> 'one can ... define a core area 40km in radius containing twelve separate finds of hoards or individual coins, including the oppida of Hrazany and Závist, each of which has produced two examples. Outside the area there are only five finds, widely scattered. On this evidence one would define the market area of Stradonice as the lower Berounka and the Prague area' (1984b:151).

Clearly there are important correlations between the two phenomena, but the appearance of coins before the establishment of even the earliest oppidum and the local developments in northwestern Bohemia and Saxony (to take only two areas) illustrate the dangers of linking the use of coinage and the oppida too closely. In addition there are questions regarding the relationship between the various oppida, which do not appear to conform easily to an intepretation based on the central role of individual sites. Within the 40km market area of Stradonice both Závist and Hrazany have produced debris from the minting of coins, though there is no indication of the relationship between the coins produced on any of the three sites.

At both Závist and Staré Hradisko, fragments of coin moulds were recovered from multi-purpose palisaded enclosures (Meduna 1970a, Čižmář 1989a, b), but equally other finds from Závist (Jansová 1974, Motyková, Rybová and Drda 1978) were found close to one of the main gates, as was the case at Hrazany. Whether these locations reflect different forms of the organisation of production, it is difficult to tell, though it is a possibility.

In terms of practice as well as of theory the entire subject requires a full review, both regarding the numismatic evidence, and in relation to other aspects of craft production (Haselgrove 1987b:29, unpublished). Space, as well as access to the data, precludes such a study here, and it is only possible to arrive at an interim conclusion. This must be that though the production and circulation of coinage is linked to that of other types of goods in the period and area under consideration, the nature of the links are obscure may not conform to those expected when judged from the standpoint of contemporary rationality. The relationship between the distribution of coinage and that of other goods will be examined further in the final chapter.

2.7 Circulation and exchange.

References have been made in the previous sections to the exchange and circulation of artefacts. This section will present a synthesis of the information available.

2.7.1 Circulation; the evidence of artefacts.

The trade in quernstones was briefly mentioned in section 2.2.5. Two centres of production have been identified, at Oparno - Malé Žernoseky in northwest Bohemia and in the Kunětice Hory in the northeast. Using petrological characterisation, Fröhlich and Waldhauser have traced the products of these quarries throughout Bohemia (Waldhauser 1981a, Fröhlich and Waldhauser 1989). Two patterns emerge. The first is the differential supply of querns to settlements within the same local area, and the second is the pattern of regional variation across the whole of Bohemia.

The first pattern, which Fröhlich and Waldhauser term 'microstructure' (1989:42), refers to the differences observed between farmsteads and villages within the same 'microregion'. Based on the analysis of querns from five settlements in the Horní Lukovsky potok - Radovesice area, they have identified differential access to querns from Oparno - Malé Žernoseky. At the two villages, Radovesice 23 and 19, 70 and 67 percent of the querns respectively were made of the higher quality imported raw material, whereas the two farmsteads, Radovesice 149 and 152 had only querns made of local, inferior stone. The fifth farmstead (148) had no querns at all. Waldhauser and Fröhlich explain this in terms of quasi-capitalist economics; that the larger villages, having the ability to manufacture goods of higher value (iron and non-ferrous metals) than simple agricultural products were able, in exchange for these things, to obtain higher quality ('more expensive') products. In support of this they cite the occurrence of slip decorated pottery, an 'expensive' item, on these richer settlements.

The second pattern of variation, termed 'macrostructure' (Fröhlich and Waldhauser 1989:44), occurs at the regional level. This is a pattern of fall off in the occurrence of querns from a high percentage near the source, to a low percentage, or absence, distant from the source, in this specific case, from northern to southern Bohemia (1989:Table 3). The higher quality northern Bohemian raw material is replaced by a variety of local types of stone, of differing suitability for the purpose. The explanation for this is given as an increase in value with distance from the source. Empirically a threshold of 117km

can be identified above which querns do not appear to have been transported. The fall off pattern is not regular, but is distorted by the

> 'differentiated purchasing ability of the communities or individuals' (Fröhlich and Waldhauser 1989:45)

so that the numbers of northern Bohemian querns found at Stradonice, Závist and Hrazany is higher than a regular fall off pattern would indicate. The two centres of production do not have discrete 'marketing zones', distributions within northern Bohemia overlap considerably (Waldhauser 1981a:Map 2), which seems anomalous in the context of the neo-classical explanation offered.

A similar pattern of fall off has also been documented by Waldhauser for the case of the *Graphittonkeramik* in the period La Tène C - D1 (Waldhauser unpublished). The representation of *Graphittonkeramik* vessels from 31 sites in Bohemia was calculated as a proportion of the total ceramic assemblage, and plotted in relation to the sources of the raw material. Three zones have been defined by Waldhauser, though these are somewhat arbitrary in terms of the distances chosen to define them (illustrated in Figure 2.8). Up to 50km from the clay sources *Graphittonkeramik* represents up to 36% of the ceramic assemblage, between 50 and 100km, 10% and between 100 and 175km, 2%. The pattern is similar for both major sources of raw material, in southern Bohemia (close to the oppidum of Trísov) and in eastern Bohemia. An alternative interpretation is to see a two fold distinction between the southern part of Bohemia and the Krušne Hory (Erzbegirge) foreland in the northwest. In the former *Graphittonkeramik* is common (rarely less than 12% of a given assemblage), while in the latter it is extremely uncommon, rarely more than 3% of the total.

The possibility of a trade in raw material has been referred to in section 2.2.6, in connection with the discovery of lumps of graphite on certain sites. At present it is difficult to determine the relative importance of the trade in finished pots, in graphite for temper and in clay. The typological similarity of the vessels suggests production at a limited number of centres, and Čižmář and Meduna's study of the designs found on the base of some of the vessels (1985) points to production in Moravia (Milovice and Staré Hradisko) based on the sources of graphite found in western Moravia (Kappel 1969:80-2). Such evidence is analogous to that involving the movement of clay from Passau to Manching in Bavaria. It seems likely that both raw materials and finished pots were moving, the clay to production centres (at varying distances from the sources) and the vessels from these sites to others. The example of the graphite from Čataj, described in section 2.11.2, suggests that the movement of raw material did not

necessarily involve the closest raw material sources, though the extent of this type of more complex interaction is obscure.

It is difficult to determine the extent to which the distributions of the typologically similar vessels, such as those identified by Waldhauser and Salač (section 2.2.6), are the result of the circulation of the vessels themselves, as opposed to the movement of potters and the establishment of regional traditions of production based perhaps upon the movement of individuals as marriage partners. If they are the former then the probability is that production, at certain levels, was based upon centralised workshops and the exchange of goods at the regional level. The latter implies the existence of a rather different set of relationships. Typology alone is an inadequate tool for the investigation of such questions and some technique of physical characterisation of the raw materials is required.

The sapropelite rings, discussed in section 2.2.5, were widely traded in La Tène B2 - C1 (Waldhauser unpublished: Figure 6, Rochna 1961) and Waldhauser's brief survey indicates that the pattern of distribution does not conform to a regular pattern of fall off from the source area within Bohemia. Their distribution in central Europe as a whole is also sporadic, clusters occurring in central Bohemia, Moravia, Bavaria, southwestern Slovakia and Switzerland (Rochna 1961 Figure 1). As these objects differ from querns and cooking pots both in their function (symbolic) and in the context of their deposition (mainly, though not exclusively, cemeteries) it would seem that the different patterns of distribution are related to the social role of the artefact.

These are the only materials for which quantitative data are available. There is clear evidence of the movement of other items, but documentation is at a qualitative, or in some cases, anecdotal, level.

The exchange aspect of the pattern of iron production outlined in section 2.2.3, with a partial separation between the smelting of the ore and the fabrication of the finished products, is represented by the occurrence of ingots and 'currency bars' in La Tène C contexts (Collis 1984:87). Such a pattern, involving the circulation of semi-finished products, has been taken to imply the existence of a separation between smelters and blacksmiths. Collis has claimed that this separation disappears in the later period with production becoming centralised on the oppida and the exchange of finished goods replacing that of local fabrication from ingots.

There are a number of problems with this scheme. It is not, for instance, born out by the nature of those undefended sites with evidence of production. During La Tène C certain sites combine smelting and smithing (eg Mšec), and, during La Tène D, some undefended sites continue to work iron with no

evidence that they were involved in its smelting (Markvatice, Velké Hostěrádky). Other industrial villages continue to both smelt and forge iron and apparently co-exist with the oppida (Chýně). This is not to deny the importance of the oppida, many of which have similar facilities (section 2.5.1), but it does raise questions about the nature of the associations between the two types of site and the complexity of the exchange relationships involved. The conclusion that both finished products and ingots were circulating, certainly in the earlier period and probably also later on seems unavoidable. The rarity of later ingots does raise problems, though the greater quantity of iron in circulation might have allowed a greater use of scrap metal. A further complication is added by Salač's observations in the Erzgebirge foreland (1990a), where, he suggests, iron working was wholly decentralised for the entire Hallstatt D and La Tène periods. This picture, one of local, regional self sufficiency, implies circulation on a small scale, with a smith serving a number of hamlets. Generally the impression is one of a number of forms of circulation, partly related to the supply of iron ore, but also, at least as far as centralisation is concerned, to social factors.

In the case of glass, Venclová has suggested (1986b:284, 1990) that Stradonice was the source of supply for central and northern Bohemia. Southern Bohemia may have been amongst the areas supplied from Manching. Similar roles were played by Staré Hradisko in Moravia and perhaps by Velemszentvid in Hungary. The pattern seems to be one of centralised production and distribution, apparently on a larger scale, in terms of the areas served by individual sites, than with other goods. The potential offered by physico-chemical characterisation to add detail to this picture is considerable. Neutron activation analysis of samples of Bohemian glass and later Roman imports has already demonstrated the distinctive nature of the local objects, but as yet not enough samples have been analysed to allow the distinction of different sources of glass within Bohemia (Frána and Mastalka 1984). These analyses have also demonstrated that the technique of glass blowing, to form small vessels, was known in the first century BC and have led Venclová to comment that

> 'in Bohemia, only the Medieval glassmakers surpassed their Celtic predecessors as to the general quantity of production and the range of products, and only the modern masters as to the glass quality' (1986b:284).

It has been suggested that one reason for the homogeneity of material culture in the later Iron Age is the increased intensity of interaction between communities and individuals, within which the circulation of goods is an important element (Collis 1984b:146, Wells 1984). Unfortunately the very

homogeneity that this large scale interaction seems to have promoted, obscures its nature. In the case of small metal items such as brooches, although their chronological variations have been the subject of extensive research, almost nothing is known of the ways in which they circulated within the community. In part this is due to the greater prominence that has been given to goods of exotic origin and the effects of trade with the Mediterranean which, as I have outlined in chapter 1, is held by many writers to have been the major formative influence on Iron Age society. While there is considerable archaeological evidence for such trade during the Late La Tène in Western Europe, there is no evidence for trade on such a scale in Central Europe.

Though the concept of coinage seems to have spread to Central Europe at about the same time as it did to other areas of temperate Europe (sometime during the third century BC), subsequent to this Bohemia and Moravia remained relatively isolated from the wave of Mediterranean goods that are such a feature of settlements in western Europe. Some imported goods are certainly present and have been described by Svobodová (1983, 1985), Venclová (1986, 1990) and Guillaumet (1977). The character of these objects is somewhat different to those from French sites, and shares closer similarities with finds from German sites.

Wine amphorae are represented by only seven sherds, two from Stradonice (Svobodová 1985:664) and four from Staré Hradisko (Meduna 1970a: Figure 46-4, Čižmář 1989a:266) and one from Bořitov (Čižmář 1990:313). The sherds from Stradonice and three earlier finds from Staré Hradisko are of the Dressel 1A type, a form that appears in the first half of the second century BC and continues until it is replaced by the 1B type, between 70 and 50 BC (Peacock 1971:175, Fitzpatrick 1985:307). The form of the three more recent finds from Staré Hradisko (Čižmář 1989a) has not been reported, though they consist of two rim sherds and a handle. The sherd from Bořitov is an unidentifiable fragment of a handle. It is possible that wine was reaching the area in wooden or leather containers, and many of the bronze vessels, which form the numerically dominant class of imports, can be seen as being associated with the drinking of wine (Břeň 1966, Svobodová 1983). The distribution of these vessels is, with the exception of handles from Bořitov and Sedlo (Guillaumet 1977, Čižmář 1990:Figure 2;2), dominated by certain of the oppida, (Stradonice, Třísov and Staré Hradisko), which have produced both the widest range of types and the greatest numbers (Collis 1984b:138). Finds from other oppida are more restricted. The occurrence of such objects on undefended sites is extremely rare, and, in some cases at least (though not at Bořitov or Sedlo), post dates the La Tène occupation, which has led to suggestions that they in fact

originated from the oppida (Svobodová 1983). It is equally likely that they belong amongst the items traded after the end of the La Tène period, when the volume of trade to the area increased (Fulford 1985, Hedeager 1987).

Other objects are even rarer. Glass vessels, possibly from southern Italy (Venclová 1986b:284, 1990:159), jewellery, mirrors, stylii and the frame of a wax writing tablet (Svobodová 1985, Čižmář 1990) all point to contact with either individuals from the Mediterranean, or with others who had direct or indirect contact with them.

Whatever the case further west, these few objects cannot be considered as the basis of an economic system or as a primary source of social power for their owners. At best they are symbols of power, wealth or influence, the source of which must be sought elsewhere. In connection with this it is perhaps significant that at least some of the gold used for minting La Tène coins was derived from Greek and Roman coins, melted down and recast into local issues, presumably of greater value than the originals (Neměskalová-Jiroudková 1986).

The survey by Sakař (1970) of Roman imports reaching Bohemia during and after the 1st century AD shows the nature of the goods changes very little from those found on the oppida. Copper alloy jewellery, vessels and utensils remain the principal items, with pottery fluctuating in importance. The intensity of the trade varies considerably over time (Sakař 1970:69). Spatially, these later (ie imperial) Roman goods are concentrated in central and northern Bohemia, with many coming from sites that seem to have maintained their importance as centres of iron production into the 1st century BC. The details of this later trade in Roman goods has been fully dealt with elsewhere (Fulford 1985, Hedeager 1987, Parker-Pearson 1989).

Long distance trade was not limited to irregular contacts with the Mediterranean. Contact between Central and Western Europe has not been given even a fraction of the attention devoted to the north - south (principally Italian - French) contact. In spite of this there is a certain amount of evidence for such contact, in addition to that assumed as a background to the homogenisation of material culture. Specific examples include Gallic coins from Central European oppida and Central European coins from France (section 2.6) as well as pottery, such as the *Grapittonkeramik* vessel from Aulnat (Périchon 1972), and possibly the fragment of slip decorated pottery with a zoomorphic design (NM2422, Figure 2.9) from Stradonice (Guichard 1987).

Contacts also existed with northern Europe. The best known example of such contact is provided by amber which originated in the Baltic. The excavations at Staré Hradisko (Meduna 1970a, b), Bořitov (Čižmář 1990) and Stradonice (Rybová and Drda 1989) have produced a quantity of amber fragments which indicate that production of finished goods was taking place on the sites, although no information is available regarding the subsequent distribution of the artefacts (Collis 1984:101).

Exchange with the societies to the north was not limited to amber. Germanic pottery has been found associated with La Tène material at Lovosice (Salač 1987) and Bubenec, a suburb of Prague (Salač and Konopa 1985). Excavations at Bořitov in Moravia have produced sherds of Przeworsk and other hand made pottery (Čižmář 1990:313). Whether the pottery itself was the object of trade, or whether it accompanied individuals or contained perishable goods is not clear. Two belt hooks, Germanic in style, have also been found at Bořitov (Čižmář 1990:Figure 2; 12, 13).

2.7.2 The location of settlements and the methods of transport.

As well as the direct evidence of the circulation of goods in the form of the goods themselves, the importance of exchange may be apparent from the location of settlements (Figures 2.5 and 2.6). The position of the oppida above the valleys of the major rivers (in the Bohemian case, the Vlatava and its tributaries) is well known, and appears to be one of the determinants of their location (Collis 1984b, Bintliff 1984, Wells 1984). Priority however cannot be assigned to this factor as a determinant more significant than others, sites apparently having been chosen which offered a combination of advantages (including defence and a position between fertile lowlands and upland areas). In the absence of quantitative studies of artefact distributions, little can be made of the presence of the oppida in positions offering the potential to control river traffic, other than to point out that it suggests that the regulation of movement was a factor in their location. The positions of Staré Hradisko, Hostýn, Plavecké Podhradie and Velemszentvid offer something of a contrast to that of the Bohemian sites. None of these sites are located on a major navigable river, even Staré Hradisko lying only on the upper reaches of the Valová, a tributary of the Morava. In spite of the finds that indicate its connections with other parts of Europe (including Mediterranean goods and amber), the site seems to have been located with more regard to the local concentration of population than to the demands of long distance, waterborne trade. Similar observations are true of Hostýn, Velemszentvid and Plavecké Podhradie and the two Púchov culture sites, Štramberk and Kojetin.

The converse is true in northern Bohemia, where the sites lying in the valley of the Labe (Elbe) and its northern and western tributaries, though clearly involved in the exchange of goods, do not share the characteristics of oppida. The largest of these is at the confluence of the Ohře and Labe, near the towns of Lhotka nad Labem and Lovosice. This site, or complex of sites, already mentioned as the location of various forms of production (section 2.2.2, Figure 2.2) seems also to have played an important role in the circulation of goods. Finds from unpublished excavations (Salač pers. comm.) suggest that contact existed with settlements north and west of the Krušne Hory, as well as with the rest of Bohemia, and this has lead to suggestions that the site is some form of gateway community or port of trade (Polanyi 1971, Hirth 1978, Salač and Konopa 1985, Fröhlich and Waldhauser 1989:21). So far the site is unique, though Salač and Konopa have suggested (on somewhat tenuous evidence) that another might exist in the Prague area (1985:162).

The location of the agricultural villages and farmsteads does not seem to have been determined to any great extent by the presence of navigable waterways. The agricultural sites are primarily located with respect to farmland and streams were used primarily as a source of water (section 2.2.1). The industrial villages in Bohemia vary in their location. Those in the Ohře valley are certainly within reach of the river, a major tributary of the Labe (Elbe). Those in central Bohemia (around Kladno and Nove Straseci) are more remote. Several sites in Moravia lie close to, or on, tributaries of the Morava, though it is difficult today to assess the transport potential in prehistory of many of these rivers.

In practice it is difficult to distinguish between the requirement for productive land and for efficient communication between settlements, particularly given that the most densely settled areas tend to be river valleys and basins which combine the two (such as the valleys of the Labe (Elbe), Vltava, Ohře and the Strakonice basin). In addition the importance of rivers as a means of transport should not be overestimated.

There is a tendency, when considering prehistoric trade, to focus on rivers as the key to medium and long distance transport. This may be to overlook the importance of the use of pack horses and wheeled vehicles. If, as has been suggested, the circulation of goods in the Middle and Late La Tène consisted to a large extent of finished or semi-finished goods, then transport by horse would be a feasible alternative to the use of the rivers. Unfortunately the faunal reports that have been published from the study area are inconclusive. The horse is certainly represented on many sites (Čižmář 1987, 1989a, Peske 1984, Meduna 1980a, Čižmář and Jelinková 1985, Waldhauser 1986b), but essential information (age at

death, pathology, comparative numbers and inter site variations) are lacking and it is difficult to draw meaningful comparisons between sites. There is certainly no reason why pack horses should not have been used; the advantages of using animals for transport has been suggested as a reason for their domestication in widely separated areas during the fourth millennium BC, in what Sherratt has referred to as a

> 'revolutionary increase in transport potential' (1981:275).

Archaeology and the textual record both attest to the use of horse drawn chariots during the Iron Age; chariots appear in burials and are depicted on coins (Piggott 1983, Meniel 1987). The classical authors (notably Posidonius and Caesar) refer to chariots both in warfare and in displays of status. The training of animals to work in pairs pulling a chariot is considerably more difficult than the training of pack animals. As regards the costs of using animal as opposed to water transport, figures are available which have been calculated for transport both within and outside the Roman empire. These stress the cheapness (and hence the importance) of transport by sea, clearly an irrelevance in Central Europe, but also refer to the relationship between river and land transport. Hopkins (1978:44) suggests that the ratio of cost between the two is approximately 1:10 (river:land). Kunow (cited in Greene 1986) has calculated the costs of transport beyond the Rhine frontier as 1:5.9:62.5 (Sea:River:Land), which gives a ratio of 1:10.5 between river and land transport, even allowing for the poorer roads outside the empire. Such a ratio, as Hopkins points out, is not significantly higher than that acceptable in many other non-industrial societies where transport by horse has been of great importance. At present it is impossible to do more than concur with Hopkins' statement that

> 'Land transport was important for trade in the Roman empire; the truth of this statement can be illustrated but not proved' (1978:44).

As a working hypothesis it seems reasonable to suggest transport based on the use of navigable rivers and on established pack horse trails, carrying finished and semi-finished goods over medium to long distances and raw materials over short and occasionally longer distances. The precise organisation of these patterns of circulation depended upon the nature of the economy and the social relations of production and exchange.

2.8 The archaeology of the later Iron Age in Slovakia and Transdanubian Hungary.

2.8.1 Introduction.

In contrast with Bohemia and Moravia where, with the exception of small areas in Northwestern Bohemia, and a handful of sites in Northern Moravia, the archaeological record is one of homogeneity and standardisation of material culture, the record in Slovakia and Hungary is more heterogeneous and somewhat less well understood. Description, synthesis and explanation have been undertaken within a culture-history framework that has drawn heavily upon the supposedly unproblematical links between material culture and ethnicity.

As the area is somewhat less well covered in the English language literature on Central Europe than are Bohemia and Moravia the following section will present a brief outline of the conventional cultural-historical outline of the archaeology of the La Tène period prior to an examination of some of the problems involved in this interpretation of the period.

Following a long and apparently stable, though regionally diverse (and poorly known), Bronze Age (Romsauer 1981), the first items of La Tène type appeared in Southwestern Slovakia around 400 BC. These finds come almost exclusively from graves and are associated with Thraco-Scythian material. Bronze Age traditions were maintained until around 300 BC when the first La Tène cemeteries appeared. These are concentrated in the southwest of the country, while elsewhere local burial traditions persisted, in some cases as late as 200 BC. In the following sections a brief outline of the developments in the Middle and Late La Tène will be given, divided, for convenience, into the regions defined by Pieta (1981). Except where otherwise indicated this outline is based on summaries by Meduna (1980a), Pieta (1981, 1982a, b) and Collis (1972). The principal sites are shown in Figures 2.10 and 2.11.

2.8.2 South-west Slovakia: western section

The main phase of La Tène cemeteries begins with material dated to La Tène B2 (c300 BC). The number of cemeteries rose rapidly during La Tène B2b and a number of cremations have been found alongside the more normal inhumations. In common with other areas of Central Europe the cemeteries were abandoned at the end of La Tène C1. Relatively few settlements contemporary with the cemeteries have been excavated within the study area (Bujna pers. comm.) and details of the economy and the organisation of settlement are vague. Bujna's analysis of the grave goods from a number of cemeteries (1982) has suggested the existence of five distinct groups, perhaps related to social divisions. The end of the burial rite and the apparent foundation of nucleated sites such as Plavecké Podhradie and Bratislava coincided with similar changes in Bohemia and Moravia. Indeed Plavecké Podhradie, located on the western side of the mountains is one of the most easterly of the true oppida, its form contrasting with that of more typical Slovak sites such as Bratislava (see sections 2.11.3 and 2.11.4).

La Tène D1 and D2, which are considerably better known than the preceding period, saw a continuation of the trends which began in La Tène C. Plavecké Podhradie declined in importance and appears to have been destroyed during La Tène D1, while Bratislava, located at the meeting point of the Carpathians and the Danube developed as a major production and trade centre. It seems to have met a violent end around the middle of the 1st century BC (apparently the background for the deposition of coin hoards) and its functions were taken over by the settlement at Devín, which apparently thrived on connections with the Roman town of Carnuntum.

Throughout La Tène C and D, settlement defined as Celtic on the basis of the material culture was located around Bratislava and in the lower Carpathian hills which lie to the north of the city. The area was apparently more closely linked with the 'Celtic' territories to the west and south rather than with the rest of Slovakia. The hand made 'Dacian' pottery, characteristic of the sites to the east of the Váh river, is scarce.

2.8.3 South-west Slovakia: the eastern section.

This is the area which lies to the east of the Váh and around the rivers Nitra, Hron and Ipel, which flow from the north to join the Danube. La Tène B and C1 are represented chiefly by cemeteries, and again significant changes seem to have occurred during La Tène C2, though the period is as poorly understood here as it is in other parts of Slovakia. There appears to have been a move towards the

nucleation of settlements with the establishment of clusters of villages around enclosed nucleii. These were the central sites which appear to have been the counterparts of the oppida. They will be described in more detail in sections 2.11.3 and following.

The sites in this area are conventionally described as 'Celto-Dacian', a term referring to the character of the material culture, and in particular to the pottery. The assemblages are characterised by the co-occurence of wheel thrown pottery of La Tène type and hand made vessels of a style familiar from Romania and the areas later referred to in written texts as the homeland of the Dacians (Nandris 1976).

The dating and sequence of occupation of these Celto-Dacian sites depends upon the interpretation of the stratigraphy of the site of Nitriansky Hrádok - Zameček near the modern town of Surany. Excavations by Tocík (1959) revealed three phases of activity. A cemetery of La Tène type, dating to La Tène C1, was overlain by a settlement consisting of semi-sunken huts. These contained a small quantity of wheel thrown 'Celtic' wares together with 'Dacian' forms. Slip decorated pottery was noticeably absent. This phase of occupation is considered to represent an early wave of Dacian settlement and has been dated to La Tène C2. The third phase, dated to the second half of the 1st century BC (La Tène D2), is characterised by the same mixed material culture, but including a greater range of 'Celtic' pottery types, including slip decorated ware (Točík 1959:Figure 323, Schukin 1989:277-8). This latter phase is more widely represented than the preceding one, most notably by a series of sites in the vicinity of Nitra. These are located around a defended site on the hill which was extensively damaged overlain by the construction of a post-medieval castle. The lowland sites (including those recently excavated at Mikov Dvor and Sindolka) appear to be a series of discontinuous undefended villages, which, if associated with the defended site, suggest that the group is similar in form to other sites of central character found in Slovakia. A connection is generally made between this final phase and the campaigns of the Dacian king Burebista (60 - 44 BC).

2.8.4 Transdanubian Hungary.

Until recently the Later Iron Age in Hungary was a relatively neglected period (Szabó 1971:32, Gabler 1982:59, Horváth, Keleman, Uszoki and Vadász 1987). Concern with the Roman period led to a concentration on sites of this date, while studies of the later Iron Age were limited to the major sites (Bónis 1969, Petres 1976) and to rescue excavations (Gabler 1982:58). The recognition of this gap prompted the Institute of Archaeology to direct research towards means of closing it. The first results of

this policy have been the publication of the results of specific excavations (Gabler, Patek and Vörös 1982) and the collation of material from earlier excavations and from antiquarian activity which is presently held in museums (Horváth et al. 1987). The full benefits of this policy lie in the future, and in the context of this research project the situation in Hungary is the least satisfactory of any area considered.

As in Slovakia the first La Tène material in Hungary appears at the beginning of the 4th century BC (Szabó 1971, Patay 1972, Petres 1976, Jerem 1985), an event conventionally connected with the invasion of Italy by the Celts and the sacking of Rome in 388-7 BC. In the course of the 4th and early 3rd centuries 'Celtic' influence, measured by the distribution of material culture, spread throughout Transdanubia. This expansion has been connected with events recorded by classical historians, and a number of tribal names are associated with various parts of Transdanubia. Though some La Tène material has been found east of the Danube, this area retained its 'Scythian' character and the Danube remained a cultural barrier as it had done during the Early Iron Age (Jerem 1985). By the mid second century BC Celtic power had reached its peak in Hungary and the southern part of Slovakia. The Scordiscii have been identified as the dominant power in southern Transdanubia and the Balkans, while the Boii had

> 'extended their control over North-Western and Northern Transdanubia as well as over South-Western Slovakia, the centre of their coinage lying somewhere around Bratislava, as the distribution of finds shows' (Petres 1976:52).

The power of these groups declined during the 1st century BC, and the Scordiscii were defeated in 88 BC by the Romans and between 65 - 50 BC by the Dacians. The latter, under Burebista, went on to defeat a confederacy of the Boii and Tauriscii in about 45 BC, an event connected with the expansion of the Dacian state and interpreted as the cause of the second wave of Dacian colonisation in Slovakia and the impulse for a final wave of Celtic tribal movements, in this case northwards. By the time of the Roman annexation of the area, northern Transdanubia was occupied by the tribe known as the Eraviscii (who are associated with the settlement at Tabán - Gellérthegy) and the south by the Hercuniates. It was in this final pre-Roman phase that the central sites (usually referred to as oppida) at Esztergom, Velemszentvid, Szalacska, Regöly and Tabán - Gellérthegy flourished. The locations of these sites and others referred to in the following sections are illustrated in Figure 2.11.

2.8.5 Eastern Slovakia.

In eastern Slovakia La Tène C1 and C2 are, as in other areas, rather obscure. The prolonged survival of Bronze Age material culture is associated with the Kuštanovice group which, until about 200 BC, is considered to have co-existed with incoming 'Celtic' settlers. Benadik, in his summary of La Tène settlement in Eastern Slovakia (1965), has noted the appearance of La Tène together with local material in graves, both inhumation and cremation, which he considers as evidence of a 'symbiotic' relationship between the Kuštanovice and Celtic populations (1965:64). The Celtic groups are judged to have entered the area from the Tisza valley and the Danube plain during the late 3rd and 2nd centuries BC. The site of Mukačevo in the Ukraine, with a mixed 'Celto - post-Kuštanovice' material culture is one of the few settlement sites to have been found that is contemporary with this early phase of 'Celtic influence'. The site appears to have played some type of central role in the economy of the area, and has produced evidence of various types of craft production. Occupation ended late in the 2nd century BC and there is then an apparent gap in the settlement record until the foundation of the site of Zemplín in the mid 1st century BC. Benadik (1965:89) has linked this event with the appearance of the second wave of Dacian material in Slovakia and the expansion of the Dacian state under Burebista. Zemplín was not alone during this period, and similar settlements have been excavated in the Ukraine and Romania (Kotigoroshko 1989, Shchukin 1989). These sites were occupied from the mid 1st century BC into the 1st century AD and are characterised by the same co-occurence of 'Celtic' and 'Dacian' (or Geto-Dacian) pottery as are the Celto-Dacian sites in southwest Slovakia. Other aspects of the material culture, notably the burial rite, link the sites with their immediate hinterland in the upper Tisza valley. This mixture of traditions has led Shchukin to speak of a 'Zemplín culture' (1989:277). Zemplín itself was abandoned in the later part of the 1st century BC, though the sites further east survived into the 2nd century AD (Kotigoroshko 1989:57).

2.8.6 North and Central Slovakia.

The southern part of central Slovakia has been described as one of

'the most insufficiently known regions from the archaeological point of view' (Romsauer 1981:92)

and although this comment was made in the context of the Hallstatt period, it is equally true for the La Tène and other periods. Distribution maps (Nitra 1981) suggest that this gap may be due more to research bias than to any real absence of settlement. As the area forms the link between the two areas of 'Celto - Dacian' settlement described above, the lack of well excavated sites poses major problems of interpretation.

Northern Slovakia consists of two rather different zones. The central area (Spiš) consists of a gentle hilly terrain with few naturally imposing or defensive sites. The area is heavily cultivated and has been so since at least the medieval period. To the north and west the land rises steeply to the two components of the Tatra mountains the Vysoke (high) and Nizke (low) Tatry. The high Tatras are unsuitable for settlement, although the area immediately around them was inhabited. The Lower Tatra mountains are the heartland of the Púchov culture. Although systematic fieldwork began only in the 1960's the Púchov culture is one of the better known groups in the Slovak Iron Age.

La Tène material appeared in the area at a relatively late date but does so in the context of a rich local version of the Lausitz culture, the Orava group. The full Lausitz culture gave way to an interim phase, the pre-Púchov phase, at about the time that La Tène elements appeared in other parts of Slovakia. La Tène material constitutes a relatively minor element in the Pre-Púchov phase and it is only at the end of the Middle La Tène that the full Púchov culture, with mixed indigenous/La Tène assemblages appeared. Pieta has suggested (1982a, b) that the emergence of the Púchov culture owed a great deal to the physical movement of the Celtic populations from the south, displaced by the Dacian invasion. Details of the settlements, subsistence and material culture will be given below, but here it should be noted that while there are important indigenous elements in the Púchov culture, it shares certain characteristics with contemporary developments in other parts of Slovakia. Sites belonging to the Púchov culture have also been in southern Poland and in northeastern Moravia (including the two defended sites of Kojetín and Štramberk), as well as in North - Central Slovakia.

The Púchov culture continues into the 1st century AD and it is not until after a clear horizon of destruction on a number of sites that Dacian material appears in any quantity. In this context it is mixed with material showing the influence of Quadic and Przeworsk traditions.

2.9 The Celto - Dacian problem and the question of multi-cultural assemblages.

While particular research projects have dealt with the nature of individual sites or areas, synthetic accounts of the Iron Age in Central Europe have tended to take a culture history approach as their framework for both description and explanation (Pieta 1982a, b, Woźniak 1970a, b, Schukin 1988). These accounts, summarised above and in section 2.14, are based on the assumption of an unproblematic connection between ethnicity and material culture, the one being directly related to the other. In its essential elements this view of the past is the normative one which was successfully attacked by Binford and others in the early 1960's (Shennan 1989:330, Barrett 1990:31).

The general assumption in the cases under consideration here is one of material culture as a passive reflector of ethnicity, with the practical consequence that the presence of distinctive material is taken either as definitive of the presence of a certain ethnic group (except in situations where the quantities are very low), or, where material representing several traditions is found, of a group with mixed ethnic affiliations. Recent consideration of the case of the Celts (Collis 1984a:10-12, 1985, Champion unpublished, 1990, Merriman 1987, Hill 1989) has shown that even where a relatively homogeneous material culture is involved, this connection is fraught with problems, not least the nature of ethnicity itself. Collis has outlined some of the areas of potential confusion (1984a:11), and, in common with other writers, has rejected the notion of a 'Celtic society' (1985:349). The existence of something that we term 'ethnicity', in the sense of a feeling of group solidarity at a regional level which may be represented by some combination of shared 'cultural traits' such as history, language, artistic culture, material culture or socio-political structure, cannot be denied in the present or in the historical past and may, arguably, be projected back into prehistory. What cannot be assumed is that material culture will play a simple role, a complicated role, or even have a role in the constitution, definition or representation of ethnicity as defined today.

Questions about the active or activated role of material culture in the constitution of the individual self and of society are central to current debate in archaeology (Hodder 1986, Shanks and Tilley 1987, Owoc 1989, Shennan 1989:331). In general terms, the problem lies in the understanding of the connection or connections between the individual, society and material culture, and the way the latter is used by the individuals who constitute the society in the negotiation, representation and misrepresentation

of a variety of relationships. The solution to such problems is not to be found in the assumption of an simple link between material culture and the one aspect of social integration that we term ethnicity.

In the case of the Celts it has been argued that their perceived existence owes as much to the history of modern Europe as it does to the archaeology (Champion unpublished, 1990, Hill 1989, Cumberpatch, in preparation), and for this reason, and because more fruitful avenues of research are available, mention of them has been avoided the discussion of the situation in Bohemia and Moravia. In the case of the mixed groups in Slovakia and neighbouring areas the theoretical problems posed by the suggestion of one ethnicity, are compounded by the suggestion that ethnicity may be multiple or that different ethnic groups may have co-existed. None of the problems outlined above have been seriously considered, ethnic affiliation and its representation in material culture being taken as given. Thus the 'historical fact' (Meduna 1980a:33) of the Dacian expansion into Slovakia and northern Hungary under Burebista is taken as an explanation for the occurrence of the mixed groups of material, without any consideration of why or how this might occur.

Other more specific problems also arise. In the case of the Celts a number of stylistic traits coincide to give a relatively broad base from which the concept of Celtic ethnicity can be defined, whereas in the Slovak cases the definition of the groups is based almost solely on the pottery typologies. The suggestion of Dacian expansion and colonisation (as opposed to the military campaigns of Burebista) is based on very poor evidence. The first wave of colonisation has been defined only at Nitriansky Hrádok - Zameček, where settlement evidence, including 'Dacian' pottery overlies a 'Celtic' cemetery. Quite apart from the problem of extrapolating generally from this one case, the contextual difference between burial and settlement deposition makes the assumption of a change in ethnic affiliation hazardous in the extreme (Parker-Pearson 1982).

The existence of the second 'wave' as an event rests upon the ackowledgement that the historically attested campaigns of Burebista led to the widespread colonisation of the areas conquered. In fact the evidence that the former took place does not imply that the latter was the result. No consideration has been given to the nature of warfare in late Iron Age society, and, though colonisation is one possible outcome of military action, it is by no means an inevitable one.

The traditional view of the situation in Slovakia and neighbouring regions has been summed up by the Russian archaeologist Mark Shchukin;

> '... in the second half of the 1st century BC - first half of the second century AD, a chain of cultural formations began to take shape, the strongest of which were the Zemplín (Celto-Dacian) and Púchov cultures and the Tyniec group, representing, of their type, a cultural continuity. What united them initially was the direct and active participation of the Celtic population and similar forms of economic activity, in particular mountain cattle rearing with its inevitable seasonal drives of cattle, and what differentiated them was the difference in local substrata and the role of Dacian elements, which faded away towards the north.' (1989:181).

Alternative explanations have been overlooked. Little or no account has been taken of the role of, for instance, the exchange of goods and artefacts. References have been made in the literature to continuity in, for example, ceramic traditions between the Hallstatt and the La Tène periods, but the nature of these traditions have not been fully examined. Crişan (1970) has suggested that the 'Dacian' material in eastern Slovakia is linked typologically with Bronze age pottery, a suggestion echoed by Meduna (1980a:32) and, in passing, by Benadik (1965:87). The problems in proposing alternative explanations for what is clearly a complex phenomenon are compounded by the fact that the key sites (notably Nitriansky Hrádok and Zemplín) remain unpublished and it is difficult to determine the extent to which assumptions of ethnicity have dictated the interpretation placed upon the material. A complete evaluation, and in some cases a re-evaluation of a number of key assemblages is required before it will be possible to present detailed alternatives to the traditional view of the material.

In the following sections I shall present a review of the information which is available regarding the economies and subsistence of the societies under consideration and will comment only incidentally on the nature of their ethnicity. Because my aims are primarily archaeological in orientation I shall not add to or comment on the attempts, outlined above, to construct a Political (pre) History for the area.

2.10 Slovakia: Subsistence

Reconstruction of Iron Age subsistence practices in Slovakia is hampered by a general absence of detailed reports on the plant and animal remains from excavated sites. Though in recent years such analyses have begun to appear (Hajnalová 1975:35), they are rarely included in older excavation reports.

The most detailed analyses of plant remains have been conducted on material from sites in the Liptov and Žilina basins in Northern Slovakia (Hajnalová 1975, Pieta 1982a).

The deposits from the sites at Liptovská Mara have been particularly productive, yeilding about 12 kilos of carbonised grain from La Tène contexts and a smaller quantity from pre-Púchov contexts. Other samples have been recovered from Divinka and Púchov. The overall picture is of the cultivation of three

types of wheat, millet and oats and pulses including peas and horse-beans. Comparison with finds from the Pre-Púchov contexts suggests little change in the types of crops grown, although there may be some increase in the importance of cereal crops. It is difficult to be sure exactly how representative the late La Tène samples are as a six out of the fifteen come from ritual deposits at Liptovská Mara (Hajnalová 1975:35).

Both Pieta (1982a) and Hajnalová (1975:40) have drawn attention to the particular climatic conditions in Northern Slovakia which probably played a role in determining the agricultural practices. Pieta is of the opinion that

> 'the harsh continental climate with heavy precipitation, the short growing season and the poor quality of the ground is doubtless reflected in the form and results of agricultural work' (1982:180)

while Hajnalová has suggested that the importance of leguminous crops may relate to their tolerance of wet conditions (1975:40). The implication is that in the drier and more fertile south cereal crops were of greater significance. She has suggested that the rare occurrence in the north of *Hordeum vulgare convar. distichon* indicates that it was imported from the Danube plain where conditions for cultivation are more suitable, and where it has been found on other sites (1975:40).

The general picture, drawn from the plant remains and from surviving agricultural implements (Pieta 1982a:83, Hajnalová 1975:40) is one of mixed arable cultivation with variations related to the climate and soil conditions.

As with botanical material, detailed studies of faunal remains have not been common in Slovakia. Once again the fullest reports are based on material from excavations in the Liptov basin (Pieta 1982a). The main features of the assemblages (from Liptovská Mara, Vyšný Kubín, Kvačany and Sučany) can be summarised as follows. Pigs, a significant part of the Hallstatt faunal assemblages, declined in importance in the La Tène period. Cattle were predominant in both the La Tène and Roman periods, while the numbers of sheep/goats fell in the early Roman period. The horse became commoner in the Roman period (Pieta 1982a:179-183). These general trends are derived from small samples (the largest, from Vyšný Kubín, consisted of 1043 identifiable fragments) and from the comparison of sites with somewhat different functions. Vyšný Kubín and Liptovská Mara are large central sites, while Kvačany and Sučany are medium sized villages. The extent to which these differences affect the assemblages is not clear.

Wild animals appear on most settlements. Hunting was not a major subsistence activity, though some of the species involved could have played some supplementary role, either as a source of food or of furs, for either local use or for exchange. Alternatively hunting could have had a recreational or symbolic function. The principal species hunted were deer, boar, elk, beaver and bear. Fishing also played a minor role, fishhooks and tools for making nets having been found on several sites.

Overall there is nothing in the Slovak evidence to contradict the general impression of mixed agriculture seen in other parts of La Tène Europe. A detailed understanding of the organisation of agricultural production is, at present, impossible as there has been no exploration of strategies such as transhumance that could link the lowlands of southern Slovakia with the higher areas of the centre and north.

Information from Hungarian sites is even sparser than that from Slovakia and has been summarised by Szabó (1971). Agricultural implements are similar to those from Slovakia, and include plough shares, sickles scythes and rotary querns. The only real peculiarity concerns the animal bones from Tabán - Gellérthegy which consist of a rather higher proportion of wild animals than is normal. It has been suggested that this relates to the primitive state of the economy (Bónis 1969:210-1, Szabó 1971:34), though this seems rather unlikely, and, in the absence of comparable bone assemblages, judgement should be suspended, particularly as there is no other evidence of substantial differences between Hungarian sites and those of neighbouring regions.

2.11 Settlement and economy in Slovakia and Hungary

Because of the differences in material culture, settlement, history and geography I shall describe the archaeology of Slovakia and Transdanubian Hungary in two parts. The first will deal with the southern half of Slovakia (in practice the Danube plain and the drainage basin of the River Bodrog) and Transdanubian Hungary, and the second with Northern Slovakia, the area in which the characteristic assemblages of the Púchov Culture are found (in practice this includes sites in Northern Moravia and Southern Poland).

2.11.1 Southern Slovakia and Western Hungary.

2.11.2 Farmsteads and villages.

The basic pattern of rural settlement in Slovakia and Hungary resembles that of Bohemia and Moravia in that the smallest was the palisaded farmstead, usually referred to as a *Gehöftsiedlung* (Kuzmová 1980, Pieta pers. comm.). Though relatively few of these sites have been fully excavated, enough are known to indicate their general distribution in the area. Examples include Chotín and Kamenín in southwest Slovakia, Ladmovce, Michalovce, Hran, Brehov, Cejkov and Streda nad Bodrogom in eastern Slovakia. Whether the farmsteads were orientated towards larger villages, as is the case in Bohemia, is not clear. Excavations of rural sites in southwest Slovakia and northwest Hungary have not been extensive enough to adequately document this latter class of site, though there are indications that they existed.

Horváth's survey of the surroundings of Keszthely (Horváth et al. 1987), at the southern end of Lake Balaton produced clear evidence of 12 settlements, with a further 20 stray finds and 31 cemeteries. Unlike other areas the practice of inhumation seems to continue into La Tène D, and some of the small cemeteries may be associated with the settlements, although a great deal more work on the settlements is required before the connections are clear (Horváth et al. 1987:63). The majority of the settlements date from La Tène D and appear to be farmsteads, though near Keszthely itself a larger settlement was loosely dispersed along the shores of the lake.

Further south excavations and survey in the Kapos valley, particularly on the site of Szakály - Réti foldek, have demonstrated continuity of occupation on this rural settlement throughout the late Iron Age and Roman period (Gabler 1982). The La Tène settlement (C2 - D2) was an agricultural village. Apart from stake holes and an associated spindle whorl indicating spinning and weaving, no other traces of craft activity have been found, though at the time of publication only 1.5% of the site had been excavated (Gabler 1982:76). The village had widespread contacts, sapropelite bracelets, graphite tempered pottery and a small quantity of pre-conquest Roman goods indicate contacts to both the north and south. The origin of the wheel thrown pottery on the site is not clear, though the absence of the evidence of pottery production on the site suggests, at present, that it was brought in from elsewhere.

There are indications that some settlements did have functions other than purely agricultural ones. Pottery kilns, ranging in date from between 250 BC and the end of the millennium, have been found at

Čataj, Šarovce and Horné Obdokovce in southwestern Slovakia and Prešov in the east (further details are given in appendix 2). Evidence of metallurgy is rare, but traces of iron working have been found at Vycapy-Opatovce (Kuzmová 1980, Princ and Skružny 1977, Ozdáni and Hečková 1987). Because of the scale of the excavations on these sites their precise nature is unclear. At Čataj for example, rescue excavations revealed only one hut and the kiln complex (Ozdáni and Hečková 1987). In addition the proximity of the site to Bratislava raises the question of the relationship between the two.

Princ and Skružny (1977) have referred to a number of kilns from Hungary, apparently located on rural sites, and, though few details of these are available, some at least seem to have been multiple, possibly resembling those at Čataj. At Acsa, an excavation of a settlement dating to the Arpad period also revealed two La Tène huts, one of which contained pieces of graphite, perhaps intended to be mixed with local clay as temper or representing the debris from the cleaning of imported clay.

More detail is available in the case of Sopron - Krautacker (Jerem 1984a,b Kardos et al 1985) where three kilns and associated pits, structures and wasters were located on a lowland site continuously occupied from the sixth to the first centuries BC. The kilns were dated to La Tène B/C (one) and C/D (two). The site itself had, during the Hallstatt period, been associated with the nearby defended site of Sopron - Burgstall, though whether this association continued into the La Tène period is not clear, there being relatively few La Tène finds from the defended site (Patek 1982). The potters working at Sopron - Krautacker seem to have been producing stamp decorated vessels during the 4th century BC (Jerem 1984a:76) and the distribution of these vessels suggests extensive exchange (Jerem 1984a: Figure 20). Physical analysis of material from the site has concentrated on material from the earliest of the kilns (No. 199), and, though it is clear that the production of fine wares continued in the later period, the extent of the circulation of these later vessels has not been investigated.

On the basis of this evidence it is impossible to identify positively members of a class of sites corresponding to the larger industrial villages found in Bohemia and Moravia, but equally it is clear that a number of villages were involved in the production of pottery on a scale justifying investment in permanent facilities. There does not appear to have been the same diversity of craft production as in the areas to the west, but, as I shall describe in the following sections, this is a trait which is also found on the larger sites in southern Slovakia and Hungary.

2.11.3 Central sites.

Two principal terms are in use to describe the larger, nucleated or semi nucleated sites in Slovakia and Hungary. The first is 'Oppidum', derived from the apparent similarity in functions between these sites and those further west and the second, coined by Collis (1972), is 'Zemplín type site'. At the risk of causing confusion I shall use neither of these terms, for the following reasons.

Oppida have specific spatial characteristics, few of which are met by the larger sites east of the Malé Karpaty - Bilé Karpaty hills. In particular the extensive ramparts and elaborate gateways typical of oppida are absent and the enclosed area rarely covers more than a few hectares. Divinka, the largest of these sites has an enclosed area of only 12ha, smaller than even the smallest of the Bohemian oppida, Nevězice. More importantly, though the defended sites provide a focus for settlement, the bulk of this settlement lies outside the walls, normally forming a series of discontinuous clusters within a one kilometre radius of the central enclosure. There are indeed similarities between the functions of these sites and the oppida, but these are so general (location of production and location of ritual activity for example) that to use them to define a class of sites seems a less than rigorous use of the terminology. Collis' solution to this problem was to use Zemplín as a type site (1972:314), but, though this adequately distinguishes the two types of site, there seems to be a danger that it could lead to the ascription of privilege to the characteristics of a single site over differences manifested by others.

In place of these terms I shall simply refer to these sites as 'central sites'. This may seem to prejudge their nature, but as I shall show in the following sections, there do seem to be good grounds upon which they can be shown to fulfill some type of central role in relation to a surrounding region. In some contexts the word 'central' may carry overtones of Central Place Theory, but in this case no such association should be made. Though under certain conditions Central Place Theory may still have a role to play (Collis 1986:39), the present context is not one of them.

2.11.4 The characteristics of the central sites.

The chief characteristics of the central sites, in terms of their form were briefly outlined above. Unlike the oppida, these sites are distinguished by a small defended (or perhaps simply enclosed) nucleus, usually on a hill, surrounded by an extensive area of discontinuous settlement. From the point of view of preservation it is unfortunate that the majority occupy locations favoured for later fortification. At Bratislava post Roman occupation of the hill which forms the termination of the Malé Karpathy hills,

and overlooks the Danube, began in the ninth century AD and grew dramatically during the thirteenth. At the same time the area forming the centre of the modern town was occupied, and this occupation destroyed a substantial part of the Iron Age settlement. Excavations on the site of the Academia Istropolitana (Novotny 1979) have uncovered part of a stone built gateway and wall apparently dating to the La Tène period, which appears to have surrounded the hill. The distribution of finds from the area of the modern town, plotted by Zachar (1982b) shows an area of settlement stretching eastwards from the foot of the hill, and a second, separated from the first by an interval of some 500 metres, lying to the north. Neither of these sites appear to have been enclosed.

The site at Devín has likewise suffered from the construction of a castle, again in the thirteenth century AD, which effectively removed most of the traces of earlier occupation. The evidence that does survive indicates that the hill, and possibly the area around, was occupied at the end of the La Tène period and throughout the Roman period, when close connections were maintained with the town of Carnuntum (Plachá and Pieta 1986). The La Tène settlement seems to have been established somewhat later than that at Bratislava (Pieta 1981). The relationship between the two sites is shown in Figure 2.12.

A similar situation exists at Esztergom (Figure 2.13), where the hill (Vardomb) currently occupied by the cathedral was the site of a royal palace from the 11th - 13th centuries AD. No trace now remains of any La Tène defences, but the undefended settlement lies around this and a neighbouring hill (Szent Tamas Hegy) on the banks of the Danube (Petres 1976, Keleman 1987).

For many years it has been assumed that the construction of the Citadel on Gellérthegy in Budapest had removed all trace of the earlier fortifications (Petres 1976). Recent excavations however have demonstrated that a section has in fact survived (Nováki and Péto 1988). This section lies to the north of the Citadel, overlooking Tabán, one of the principal areas of settlement (Bónis 1969). The La Tène defences, which consist of two phases, overlay and made use of a Late Bronze Age rampart, though there does not seem to have been continuous occupation on the hill. Below the hill medieval and post medieval developments have obliterated most of the earlier archaeology, and the extent to which the settlement at Bekasmegyer was linked with the defended site, or with other undefended sites is unclear.

Other damaged sites include Nitra and Komárno, where the construction of post-medieval fortifications has removed the La Tène defences, though clear evidence of occupation survives. In the case of Nitra, excavations on the gravel terraces of the river have revealed a series of undefended

settlements with a variety of functions (described below) and finds from the vicinity of the castle indicate the presence of a settlement on the hill.

Komárno may represent a divergence from the normal situation, where a hill provides the focus of settlement. The La Tène settlement lay on the promontory formed by the confluence of the Váh and Danube, and currently lies beneath the 17th century fortress (Figure 2.14). The construction of this fortress and the clearance of the ground in front of it resulted in the destruction of most of the La Tène layers, but finds made during building work in the recent past have all the characteristics of those from a central site (Pieta, Trugly pers. comm.). It is to be hoped that with the withdrawal of the Soviet army formal excavations will be possible within the area of the fortress in the near future.

The classic site of this type, Zemplín, lies in a considerable distance to the east of those described above, and has close affinities with sites in the Ukraine (notably Mukačevo which precedes it) and in Romania (Collis 1972, Nandris 1976). The site has been extensively excavated and, though the La Tène site is overlain by medieval earthworks and religious buildings, the Iron Age features have survived remarkably well. The defended area measures 240 x 150 metres, and is enclosed by a rubble wall overlying a La Tène surface containing large deposits of slip decorated pottery and ash (Benadik 1964: Figure 1). The undefended settlement stretches for over a kilometre along the banks of a former course of the Bodrog (Benadik 1965: Figures 2 and 3).

The one site that appears to be slightly anomalous is Nitriansky Hrádok. The site is effectively a tell, with occupation dating from the Neolithic to the end of the La Tène period. During the Bronze Age the site was fortified and these fortifications were reused during the Iron Age. The site does not appear to have had an extra-mural settlement, though in the absence of an excavation report it is difficult to ascertain the precise extent of the excavations or the exact character of the site. Whether it is an example of an otherwise unrepresented class of sites, or whether it is genuinely unique is impossible to determine at present.

A site which requires special consideration is Velemszentvid in the western part of Hungary (Von Miske 1908, Collis 1975). Though the site lies inside Hungary today, it is clearly part of the western zone of central sites, and has all the attributes of a classic oppidum, including extensive ramparts and a position at the junction between a highland and lowland region, in this case the eastern Alpine foreland and the Little Hungarian Plain. The site was occupied at various times throughout prehistory and during the medieval period, resulting in a complex archaeological record and some confusion regarding the

correct attribution of some of the features on the site. La Tène settlement seems to have begun in La Tène C1, and increased in scale in La Tène C2 and D. Finds of metalwork, notably coins, link the site with areas to the west, including Noricum and Bohemia (Collis 1975:74). The site appears to have been the location of metal working, potentially at least on a large scale, though there are problems with the dating of a number of stone moulds which appear to have been used in connection with non-ferrous metallurgy. To date sherds from only two slip decorated vessels have been found and it was impossible to take samples of these for analysis.

2.11.5 Functional characteristics of central sites.

Apart from the concentration of population represented by the central sites, their character also derives from their role in the production of manufactured goods.

2.11.6 Pottery production.

The concentration of pottery kilns on the central sites is in marked contrast to that found both in the oppida and in the agricultural settlements. Kilns have been found on a number of sites, notably those along the Danube. At Bratislava six excavations have revealed kilns, one of them (in the former Gottwaldovo Nám.) including four kilns (Jansak 1953, 1955, Zachar 1982b). All date to the late La Tène and lie within the area of the undefended settlement. A similar situation exists at Esztergom, where a number of kilns have been found on the lower of the two hills (Szent Tamas Hegy), and immediately to the north at Szent György Mězo (Petres 1976). All date to the Late La Tène, though there is no clear indication of what types of vessels were being produced.

At Budapest kilns have been found on the hill; to the north of it; in Tabán (Bónis 1969:212); and to the south, though the latter may be somewhat later than the rest (Peto 1979). The concentration at Tabán lead Petres to speak of the existence of a 'potters quarter', though this may be to impose excessive regularity upon the situation. North of the main site of Tabán - Gellérthegy lay the settlement of Bekasmegyer. Though this site has not been fully published, it is known that it includes at least one kiln (Hunyady 1942, Bónis 1969:212). The site is broadly contemporary with Tabán - Gellérthegy, though the precise relationship between the two is not clear. An analogy can perhaps be made between these sites and the relationship between Bratislava and Čataj, though at present too little is known of the latter to allow definite conclusions to be drawn.

Recent excavations at Nitra have shown that this site conforms to the general rule with the discovery of two kilns (Pieta pers. comm.) in the undefended settlement of Mikov Dvor.

To date the excavations at Zemplín have produced only one kiln, from within the defended area (Benadik 1965:72, Figure 5), though the limited extent of excavations outside the enclosed area, together with the damage to these areas from agriculture, suggests that this should not be accepted uncritically as a true reflection of the situation.

2.11.7 Metallurgy.

Both Bratislava and Zemplín have produced evidence of metallurgy on a substantial scale. The finds from the excavations on the site of the Academia Istropolitana (Novotny 1979) included slag from the working of iron and copper alloys, while in the nearby Nálepkova ulica (Zachar and Rexa 1988) 223 whole and fragmentary crucibles and 22 fragments of coin moulds indicate production on a considerable scale. Though traces of the working of both iron and copper alloy have been found at Devín, the damage to the site is such that it is difficult to estimate the extent of the industry (Plachá and Pieta 1986:346).

At Zemplín excavations outside the ramparts on a terrace overlooking the former course of the river produced large quantities of iron slag, though it is not clear whether this was from smelting or smithing as the area had been severely disturbed by subsequent agricultural activity (Benadik 1965:73).

This situation is not paralleled on other central sites. In spite of extensive excavation Tabán - Gellérthegy has produced only a single half finished brooch and a mould for rings (Bónis 1969:196, 212-3). No traces of metallurgy have yet been found at either Esztergom or Nitra.

2.11.8 Other craft and industrial activity.

Other branches of manufacturing are poorly represented. Quernstones seem to have been quarried at Devín (Plachá and Pieta 1986) and in the area around Esztergom (Bónis 1969), and there may have been some bone and antler working at Tabán - Gellérthegy. Venclová has suggested (1990:143) that during La Tène C1, a site or sites in southwestern Slovakia was a major centre of glass working in Central Europe, though at present this is based solely upon typological evidence. Such a centre, if it existed, does not seem to have survived into the Late La Tène period.

The general impression is one of a limited range of craft and industrial activities, particularly in comparison with sites in Northern Slovakia and with the oppida (including Velemszentvid). If this is an

accurate reflection of the historical situation, (and the extremely small scale of excavation on rural sites must be taken into account) it would seem to imply the existence of elaborate networks of exchange for the procurement of both utilitarian and luxury goods.

2.12 Exchange and the circulation of goods.

The location of the central sites suggests that control of, or proximity to, lines of communication was of some importance to their inhabitants. Devín, Bratislava, Komárno, Esztergom and Budapest all lie at key points on the Danube. Devín overlooks the confluence of the Morava and the Danube, while Bratislava, lying only a few miles downstream, also controls the lowest pass through the Malé Karpathy hills (Zachar 1982b: Figure 2). Komárno and Esztergom both lie at the confluence of the Danube and its tributaries the Váh and the Hron. Nitra is located at the point where the Tribec hills, which form one side of the valley of the river Nitra, meet the Danube plain, and consequently has the advantage of access to two different ecological zones, as well as a major valley running northwards to the Mala Fatra mountains. Nitriansky Hrádok, though it lies in the midst of the Danube plain, is close to the river Nitra, some miles north of its confluence with the Danube. Zemplín lies in the centre of the Eastern Slovak depression, an area of lowland bounded to the north and west by the Carpathian mountains. The lowlands continue eastwards into the Ukraine and southwards to join the Hungarian plain. The area is drained by the Bodrog which ultimately joins the Tisza, a major tributary of the Danube.

The conclusions arrived at in section 2.7.2, regarding the role of draught animals in the transport of goods, can be applied equally to the situation in Slovakia and Hungary. Once again we have no direct evidence of this type of transport, but nor is there any reason to discount it. Even the areas of mountainous terrain could have been crossed (as they are today) by means of accessible passes. In the latter connection it is perhaps relevant to note the position of the multi-period site of Vyšný Kubín, which can claim some type of central role at various times in prehistory including the Late La Tène, and which overlooks the valley of the Orava, one of the principle passes through the Tatra mountains.

The clearest artefactual evidence of exchange comes from sites in southwestern Slovakia. Devín and Bratislava have both produced goods of Italian and Roman provincial origin. Late La Tène features at Devín have produced Roman republican and early imperial (Augustan) coins as well as fragments of amphorae (Dressel 6 and Rodgen 65B) and sherds of early Terra Sigillata (Plachá and Pieta 1986). The material from Bratislava is of a similar nature. A Campanian bowl (Lamboglia 7/16), a Greek amphora

and the foot of an Italian graphite tempered vessel all point to links with the Mediterranean (Zachar 1982b, Zachar and Rexa 1988), but whether these were direct or indirect is not clear. Both sites also have links with the kingdom of Noricum, indicated by finds of Norican coins, and it is possible that the Mediterranean goods arrived via Noricum, rather than by direct contact. The kingdom was well known to the Romans as a source of high quality iron and the graffiti from the Magdalensberg indicate the extensive contacts that existed with the expanding Roman empire (Collis 1984b:156). It is not unreasonable to suggest that Norican contacts extended east as well as south west, and that exchange involved agricultural produce from the Danube plain and raw materials as well as finished objects from Noricum. In this connection a brooch of Norican type from Nitriansky Hrádok may also be significant (Shchukin 1989:278).

Brooches of foreign origin illustrate Bratislava's links with other parts of La Tène Europe, including Gaul and the Balkans (Zachar and Rexa 1988:68-9, Figure 25). Again these items could have been the result of either direct or indirect contacts.

There are relatively few imported items from Tabán - Gellérthegy, though Bónis has pointed out the stylistic connections between objects from the site and from other oppida (1969:213-4). One notable import is the carved gemstone, of Roman origin, that was used to stamp slip decorated pottery (see chapter 4). Local goods include querns and whetstones from the hills south and east of Esztergom. In spite of the publication of material from a variety of excavations in the Esztergom area (Keleman 1987) this site is also generally lacking in obviously imported material.

The wide distribution of *Graphittonkeramik* and local types of graphite tempered ware, together with the restricted occurrence of the raw material, implies that both the pottery and the raw material was circulating in relatively large quantities. Few analyses of the raw material are available, but that of the graphite fragments from Čataj has demonstrated a link with southern Bohemia (Molak and Illásová 1987). *Graphittonkeramik* is widespread in Southern Slovakia, and, though its distribution in Hungary appears to be relatively sparse (Kappel 1969: Map 2), this may well be due to the lack of excavated and published sites.

In eastern Slovakia few imported goods have been reported from Zemplín. Two silver coins of the Velky Bysterec type, amongst the few to have been found outside the Púchov culture area, indicate the existence of contacts with Northern Slovakia, and two Roman denarii (48BC) suggest some type of contact with the Mediterranean, though neither need have been direct. Shchukin (1989:279) has referred

to Noric-Pannonian style belts and a scabbard from a group of Middle La Tène barrows close to the defended site.

The overall picture of the circulation of goods in this area is not as clear as could be desired. Although the major settlements seem to have been located with transport as an important consideration, this is not generally reflected in the quantities of material recovered from excavation. The principal problem would seem to be not that goods were not circulating (such evidence as there is does not support a picture of regional isolation and self sufficiency), but that they are archaeologically invisible. In the case of metal this may be the result of the circulation in a semi finished form with the final production of goods taking place on central sites (as in the case of Bratislava). In the case of pottery too few studies of the material have started from premises other than an ethno-historical one. Questions regarding the production of the 'Celtic' and 'Dacian' pottery require urgent attention, as do the roles played by the known pottery production sites.

2.13 Northern Slovakia and the Púchov Culture.

The cultural characteristics of the Púchov culture were briefly outlined in section 2.8.6. The reservations that I have expressed about such ethno-cultural characterisations in the context of the Celto-Dacian assemblages are also relevant to the Púchov culture. Its indigenous origin, indicated by the continuity of Lausitz traditions alongside the La Tène ('Celtic') elements is clear, but whether the latter do in fact indicate the influx of a 'Celtic' population in response to Dacian military action (Pieta 1982a) cannot be taken as unproblematic.

The purpose of this section is to describe the forms of settlement and the economy of the Púchov culture which are the context in which the slip decorated pottery circulated, and may have been produced. Information about the Púchov Culture has been synthesised by Karol Pieta (1982a, b) who has not only carried out the most extensive excavations on Púchov sites, but has also summarised the results of previous, less systematic research. It is on his accounts (1967, 1971, 1972, 1976, 1981, 1982 a, b) that the following summary is based.

2.13.1 Settlement.

The area in which Púchov Culture settlement is found is divided geographically into a number of valleys and drainage basins, separated by apparently uninhabited uplands. It appears that the settlement

pattern reflected this, in that each region includes at least one actual or potential (for a number have not been excavated) central site (Pieta 1982a:138). Settlement in the Liptov basin, for instance, was dominated by the site of Liptovská Mara which overlooked both the basin itself and also the upper part of the valley of the river Váh which, flowing first west and then south, connects the basin with the Danube Plain. The site of Vyšný Kubín is similarly situated with regard to the Orava valley, an important pass through the Tatra mountains to the north of the Liptov basin.

Those central sites which have been excavated are characterised by a small defended nucleus, varying in size from 1.25 hectares at Liptovská Mara (Havranok) to 12 hectares in the case of Divinka in the central Váh valley. Around this core were discontinuous undefended settlements. The basic unit of these settlements was the palisaded farmstead (*Gehöftsiedlung*), which, as elsewhere incorporated not only domestic and agricultural features but also buildings and installations associated with various types of craft production (discussed in greater detail below). The central sites fulfilled a number of roles. Generally speaking they seem to have been the focal point for their immediate region in economic terms and, in the case of Liptovská Mara at least, to have acted as centres of ritual. Too few have been excavated on a large scale for it to be clear whether the latter function was generally fulfilled by these sites or whether Liptovská Mara was unique in this respect. The existence, at Prosné (Pieta and Moravčik 1980), of a ritual site with a number of similarities to that at Liptovská Mara (including the presence of a pit within which sacrifices were deposited and burnt), suggests that while the rituals were similar, the location of the rite was not necessarily linked with the location of a central settlement. How far it is possible to generalise from these two cases is however, unclear.

Rural settlement was characterised by dispersal within the more fertile areas of the basins and river valleys. The inception of the Púchov stage proper is marked by the abandonment of the larger hill forts which had been the basic units of settlement in the Middle La Tène, pre-Púchov stage. In their place a class of small defended sites appeared sited typically on low hills at the mouths of valleys joining the main valley or basin. These sites are small; in some cases measuring no more than 20 x 20m. None are larger than 80 x 70m (Pieta 1982a:134). The function of the sites seems to have been as defensive refuges, though the smaller ones were little more than elaborate cattle pounds. A number have produced material from the later phases of the Púchov Culture, and show signs of having been abandoned shortly after. Pieta has suggested (1982a) that the typically dispersed pattern of rural settlement is a reflection of the nature of the terrain and the uneven distribution of soils suitable for agriculture. Certainly this could

have been a factor, but as I have described in previous sections, dispersed rural settlement seems to have been a widespread characteristic of the later Iron Age, with nucleated and semi- nucleated settlements providing essential foci.

2.13.2 Metallurgy.

Northern Slovakia is rich in a variety of metal ores, and it appears that iron, copper, gold and silver were all exploited during the Iron Age. No actual mining sites have been discovered, probably due to the activities of later miners, but, as Pieta has pointed out (1982a:170), the abundant evidence of metallurgy and the relatively large numbers of metal objects found on excavated sites indicate metal working on a considerable scale.

In the case of iron ore, Pieta has suggested (1982a:170-2) that smelting and working were spatially separate, the smelted ore being transported as ingots or blooms. Examples of both have been found on a number of sites, including Liptovská Mara and Divinka. A number of sites have produced slag from smelting, and at Spišské Tomasovce in north-central Slovakia a number of shaft furnaces, from the later phase of the Púchov culture (the early Imperial period) have been found. The numbers of sites with evidence of smelting is small in comparison with those where blacksmithing was practised. There is some evidence of iron working on almost all sites, either in the form of blacksmiths tools (Pieta 1982a:79-82), unfinished objects or waste material. Only three metallurgical workshops have been fully excavated under modern conditions, all at Liptovská Mara. The first (Liptovská Mara 4 - Trench 4) was a building containing a granite anvil, a quantity of slag and fragments of two crucibles. It seems to have been primarily a forge in which a small amount of bronze casting took place. The second building (Liptovská Mara 3 - Trench 8/10), in contrast, contained fragments of fifty crucibles with traces of copper alloy, two blooms and a small amount of iron slag. In some cases at least it seems that both ferrous and non-ferrous metallurgy co-existed, although the existence of a third workshop, also in Liptovská Mara 3, containing only traces of the working of copper alloy, suggests that this was not the only form of organisation.

The smelting and working of copper and copper alloys was widespread, Púchov, Kvačany, Divinka, Cieszyn, Hradec and Liptovská Mara all having produced traces. Once again it seems that initial smelting took place at or near the site of extraction, after which the metal, in the form of ingots, moved on to other workshops for further working. An ingot and a mould have both been found at

Liptovská Mara, and a second mould at Detva in central Slovakia. Copper ore occurs relatively commonly in northern Slovakia, but tin is rare. It is perhaps for this reason that the alloys found in northern Slovakia tend to be rich in copper, and in some cases to be almost pure. Examples include nine coins and the contents of five crucibles, all from Liptovská Mara. Though for the production of tools copper alloys were superceded by iron, they remained the principal material from which jewellery and similar items were made. Compared to other areas of Central Europe the numbers and weight of such artefacts are high (Pieta 1982a:170).

Gold and silver were both extracted and worked in northern Slovakia, though the latter seems rather more common than the former. Fragments of silver wire, small punches and engraving tools attest to the production of silver jewellery at Liptovská Mara, where silver objects and fragments totalled 86 grams in weight. The coinage of the Púchov culture (and indeed of Slovakia as a whole) was principally of silver (together with copper alloy), and begins at approximately at the same time as the Púchov culture itself, the pre-Púchov phase having been characterised by the circulation of coins of foreign origin (Pieta 1982a:65-72). A number of coin moulds were found at Liptovská Mara, containing traces of silver and copper.

2.13.3 Pottery production.

The pottery assemblages of the Púchov culture are characterised by the continuation of a tradition based on a simple non-wheel technology, the antecedents of which can be seen in the Lausitz culture of the Late Bronze Age. Alongside these types of vessels are a range of wheel thrown wares (including the slip decorated pottery) which, in terms of both technology and form, owe more to the La Tène pottery tradition than they do to the earlier, local tradition.

The hand made vessels, mainly but not only, utilitarian and domestic wares, appear to have been the products of local household production and form a range of types that occur throughout the Púchov Culture area. These include wide mouthed, barrel shaped vessels, narrow necked 'vase' forms and a variety of handled vessels ranging from cup-sized vessels to large 'amphora' forms with small lug-like handles (Pieta 1982a:Figure 10). The continuity of local traditions can be seen in the persistence of handles and in the decorative motifs which, though they change over time, retain many of their Lausitz and Pre-Púchov characteristics. Though detailed petrological analysis of the pottery has not been carried out, some of the inclusions are distinctive enough to have been identified by eye. At Kvačany, a site six

kilometres from Liptovská Mara, approximately half the pottery assemblage is composed of handmade vessels with prominent local limestone inclusions in the fabric. These inclusions are noticeably absent from the fabric of the wheel thrown fine wares, and Pieta has suggested (1982a:177) that the latter originate from a potter's workshop at Liptovská Mara, this site lying on sandstone and apparently taking its clay from the floodplain of the river.

Production of wheel thrown vessels begins in the Late La Tène and includes a variety of types (Pieta 1982a:106-122), the majority derived from La Tène forms, but with others showing some local characteristics (Pieta 1982a: Figure 11). The workshop from Liptovská Mara 7, close to which was found a typical La Tène kiln (appendix 2), appears to have been associated with the production of such fine ware. The products of this workshop are typologically (and potentially petrologically) distinctive and their distribution covers the whole of the central and western part of the Liptov basin (Pieta 1982a: Figure 28). Pieta has noted (1982a:177) that the proportion of wheel thrown ware is higher at Liptovská Mara than it is at the smaller settlements, and ascribes this to the greater value of this type of pottery compared with the hand made ware. The pottery assemblages from the sacrificial deposits at Liptovská Mara and Prosné are both dominated by wheel thrown ware, together with metal objects, agricultural produce and human remains.

Graphittonkeramik was both imported into northern Slovakia and was copied locally, sometimes using imported graphite as temper. The locally made products can be distinguished typologically and by the low concentrations of graphite in the clay body. They appear to have circulated within the Púchov culture area (Pieta 1982a: Figure 12) together with vessels from the south. The forms, with their typical decorative combing were copied, often rather crudely, in local non-graphite clays.

As elsewhere pottery production in the Púchov culture area seems to have been organised on various different levels. The hand made pottery, representing a tradition derived from the pre-Púchov and Lausitz phases, retained its place as the utilitarian ware and was probably manufactured in a domestic context.

In contrast, the wheel thrown wares, which seem to have been produced on the central sites, represented a different form of production, one which demanded a greater investment in terms of labour power and the adoption of new working practices. There has been little analytical work to determine the nature of the circulation of these vessels, but macroscopic examination and the identification of

distinctive inclusions suggests that in the Liptov Basin at least, they were produced on the central site (Liptovská Mara) and subsequently reached the smaller sites (Pieta 1982a:177, Figure 28).

2.13.4 Stonemasonry.

As in other parts of the study area there is only a limited amount of evidence for stone masonry in the area of the Púchov culture. Stone for querns was quarried at Rakša near Martin in the Turiec basin. No petrological analyses have yet been published concerning querns from Slovakia, though given the scarcity of stone on the Danube plain, such analyses would certainly prove interesting.

A stone pillar 1.8m tall with a dressed surface was erected close to the ritual pit at Liptovská Mara. So far this obelisk is without parallel, though it seems to be the result of skilled labour.

The ramparts around the defended elements of the central sites indicate a high degree of technical competence in both masonry and carpentry, the walls being constructed of a mixture of timbers and stone (Pfostenschlitzmauer) in a manner resembling the Kelheim ramparts found on some oppida (Pieta 1982a:140). At Liptovská Mara, so far as can be judged from the post holes, wooden towers were erected around the gateway to the small enclosed site above the main areas of settlement (Pieta pers. comm.).

2.13.5 Other craft and industrial activities.

Inevitably a number of important crafts are poorly represented in the archaeological record. Carpentry, joinery, cooperage and woodcarving are represented almost solely by the tools used by the artisans, though a spindle of yew and a piece of carved wood (plum) have been recovered from Liptovská Mara. The importance of wooden buildings is one indicator of the scale of this particular craft. Once again I would suggest that while a certain amount of skill in this area was normal (and is indicated by the distribution of tools), certain branches of the craft would have been specialised.

In Liptovská Mara 3 a long narrow building with a paved floor seems to have been a workshop in which bone, antler and amber were worked, the products being points, needles, tools for making nets and lense shaped amber beads.

A number of glass bracelets and beads have been found on various sites in the Púchov culture region. There is no evidence that they were produced in this area and should therefore be regarded as imports (Pieta 1982a:52, 58).

2.13.6 Exchange and the circulation of goods.

The location of the central sites has been referred to in previous sections, but the point can be made once again that they appear to have been located with regard not only to areas suitable for settlement, but also with regard to the river valleys that form the obvious routes through the rugged terrain of Northern Slovakia. One implication of these locations is that they functioned as centres for the immediate region and were also in some way connected with the interregional circulation of goods.

Artefactual evidence indicates the existence of contacts with all surrounding regions, but, in the absence of quantitative and analytical data it is impossible to assess the relative importance of particular areas.

Pieta has suggested (1982:185) that Bohemia and Moravia were the source of raw materials, particularly tin and graphite as well as finished goods such as glass and sapropelite beads and rings, copper alloy jewellery and decorative items such as brooches and belt fittings.

The river valleys leading from the Tatra mountains to the Danube appear to have been the routes by which goods travelled to and from the Danube and from regions further south. Earlier contacts are difficult to trace, though the differences in the raw material resources of the Danube Plain and the mountains of the north do represent a basis upon which exchange relationships might be expected to have developed. It may be in connection with such exchange, involving metals from the north and agricultural products from the south, that *Hordeum vulgare convar. distichon* (double rowed barley), most suited to conditions in the Danube Plain, occurs in the north (Hajnalová 1975:40, Pieta 1982a:185).

The earliest coins found in the north, during the latter part of the Middle La Tène period, are all imports from the south and west, notably from Bohemia and from the areas around Bratislava (Pieta 1982a:66). It is only at the beginning of the Late La Tène that local production begins. The first phase is characterised by a number of local types with limited distribution, and the later phase by the spread of the Velky Bysterec type. This latter type is only rarely found outside the Púchov Culture area, suggesting that whatever role the coins played in social or economic relationships, these were principally intra- rather than inter-regional.

Southern contacts are particularly well represented in the later period (from the end of La Tène D2 and into the 2nd and 3rd centuries AD). Imports from Italy include bronze vessels, mirrors and, more rarely, glass ware. The provinces of Noricum, Pannonia and Illyria were the source of various goods, principally jewellery, although as ever there is the problem of the archaeological invisibility of perishable

goods. Pannonia is also the source of the Roman pottery that appears on a number of sites in the 2nd century AD (Kuzmová and Roth 1988). While the majority is Pannonian in origin, a quantity of Terra Sigillata from Lezoux in central France was found at Púchov. It is noticeable that, as in the case of Bohemia and Moravia, the flow of Roman and provincial goods increases at the very end of the La Tène period (Hedeager 1987). Prior to the occupation of Pannonia relatively few Roman goods find their way into Northern Slovakia. The origin of the central sites must, as in the case of the Bohemian and Moravian oppida, be sought internally rather than with reference to the expanding power of Rome.

Northern contacts, with 'Germanic' societies are difficult to trace. Amber was certainly imported from the Baltic and was worked at Liptovská Mara and other sites, being used principally for beads. La Tène material, including brooches and pottery has been found on various Germanic sites and there is no evidence to suggest that this was anything other than the result of the exchange of goods.

Circulation within the Púchov culture area has been referred to in passing in previous sections. It appears that both processed raw material (notably metal, in the form of ingots) and finished products (pottery) circulated within, and to some extent perhaps, between, the various sub-regions of northern Slovakia. It is not unreasonable to suggest that the central sites functioned as both the location of production of a number of types of goods and as an important component in their circulation, perhaps being the location of periodic fairs or markets, depending on the precise social constraints on circulation (discussed in general terms in chapter 3). The location of the central sites can be seen as related to their roles in both local and long distance exchange.

2.14 The archaeology of Later Iron Age settlement in Poland.

Settlements with a significant La Tène material culture component occur in three areas of Poland, two in Silesia and one in Małopolska (Woźniak 1970a, b, 1971b, 1982, Czerska 1970). The Silesian settlements, one group around the modern city of Wrocław and the other in Upper Silesia, appear in the later 4th century BC and exhibit many classic La Tène B traits, including inhumation burials, La Tène ceramic assemblages and, in the later phases, coins of Bohemian and Moravian type. La Tène sites in both areas were replaced during the earlier part of the 1st century BC by settlements with a material culture of the Przeworsk type. It is this chronological factor that seems to be responsible for the absence of slip decorated pottery from this area.

Peripheral to the upper Silesian area there is a certain amount of La Tène material, associated with a number of Púchov culture sites. These include Cieszyn, Maszkowice, Poznachowice Górne, Marcinowice, Żywiec- Sporysz, and Podegrodzie (Cabalska 1978, Godłowski 1985). These sites share the history and characteristics of the Púchov culture outlined above. A number have produced small quantities of slip decorated pottery, though none of this was available for examination or sampling.

With the exception of these Púchov culture sites, Late La Tène settlement is restricted to Malopolska, and particularly the valley of the Vistula, around the modern cities of Kraków and Nowa Huta (Figures 2.15, 2.16). Settlement in this area began somewhat later than that in Silesia, and had a rather different character.

The earliest La Tène material consists of a hoard of gold coins from Gorzów (okr. Chrzanów), two bracelets from Kraków - Mogiła and three graves from Iwanowice and Gorzów. Two of the latter are described as 'warrior burials' by Woźniak (1970a:258) and contained weapons and brooches of La Tène type. These seem to have been imported and probably originated in Southern Moravia or southwestern Slovakia (Woźniak 1970a).

The principal phases of concern in the present context are those characterized by a co-occurence, in domestic contexts, of La Tène assemblages together with material, (mainly pottery) typical of the local Przeworsk culture (Dąbrowska 1988). On the strength of this association the group is known as the 'Celto-Przeworsk' group. It is also referred to as the 'Tyniec group', Tyniec being the site of one of the larger settlements of the group (Godłowski 1985). Woźniak (1970a) in accordance with the conventional European 'ethno-cultural' view of archaeological material, has stated that the existence of the Tyniec group should be explained as

> 'the remains of a mixed population ... a tribe composed of Celts and peoples of the Przeworsk culture' (1970a:261).

Such an explanation involves similar problems to those which I have already described in connection with the 'Celto-Dacian' assemblages and the multi-ethnic Púchov culture. I shall deal below with the specific aspects of this problem, as they affect the Polish material.

The second phase of the Tyniec group, (La Tène D1) is represented by a number of sites, including Dalewice, Pełczyska, Wyciąże, and Wielicka XI. It is characterised by the occurrence of wheel made pottery with graphite tempered vessels predominating. A quantity of graphite found at Wielicka XI

suggests that graphite (or perhaps graphite clay) was being imported and used as a tempering material for locally produced vessels. The case for local production is supported by the inclusion of graphite temper in Przeworsk forms from Tyniec, but it seems that finished vessels were also being imported. The fine pottery assemblages from this phase are dominated by grey wares made of refined clay and fired in kilns such as that found at Wyciąże.

The third phase is represented by the sites immediately around Kraków including Krzesławice, Pleszów, Podłeze and Targowisko II. The phase is defined by the appearance of sherds of slip decorated pottery which have been recovered from over 20 sites in the area (appendix 1). Graphite tempered vessels are rarer and the proportion of hand made 'Przeworsk' vessels rises, on some sites to as much as 90% of the total assemblage. The brooches found on these sites suggest that the phase lasted from the mid 1st century BC until the third decade of the 1st century AD.

The La Tène (or 'Celtic') elements in both the second and third phases include pottery (principally the fine and graphite tempered wares), as well as spurs, coins, querns, most types of iron tools, kilns, hut types and iron working technology. The Przeworsk element includes certain types of knife and the hand made pottery (which constitutes approximately 50% of the assemblages in the early phase and up to 90% in the later).

Excavations at Kryspinów near Kraków have revealed a cemetery, the use of which extended from the mid 1st century BC to the mid 1st century AD. The graves are delineated by shallow rectangular grooves and contain sherds of pottery and burnt bone. These enclosures are associated with posthole alignments. There are no inhumations, and urned cremations, while present, are only one element in a very varied burial rite which includes the deposition of burnt bones in the grooves. The excavator, Godłowski, has suggested that the funeral rite involved the exposure of bodies. Pottery found at the cemetery was of Przeworsk and La Tène type, and included several sherds of slip decorated vessels. Similar cemeteries are rare, but Godłowski has referred to those at Kietrz near Głubczyce, Trojczyce near Przemysl and Třebustice in Northern Bohemia. Kryspinów however appears to predate these sites (Godłowski 1971, 1972, 1973, Godłowski and Madyda 1975, 1976, Godłowski and Mączyńska 1972).

The character of the Tyniec group poses a number of problems. As I have noted above Wozniak has asserted that the character of the assemblages proves that the area was settled by

> 'a compact group ... (of) ... Celtic peoples, and not only of individual artisans and merchants' (1970a:260).

This view conforms with the traditional explanation of change in material culture assemblages as the result of the movement of substantial groups of individuals who carried with them their distinctive goods and lived alongside the native people, whose presence is indicated by the presence of local indigenous wares. As I have indicated elsewhere, I consider that such an interpretation carries with it a number of assumptions which require rigorous examination before they can be accepted. In the present context a prime requirement is for the full publication of the major sites of the second phase and third phases of the Tyniec group. Such data would allow an evaluation (necessarily quantified) of the contexts within which the material occurred and may shed light on the questions surrounding the beginnings of the manufacture and use of the La Tène material. With the data available at present I would suggest that the earliest phase represents the arrival of artefacts through a variety of possible channels which can be grouped under the heading of exchange, while during the second there may have been some movement of individuals who brought with them the technical skills necessary to begin the manufacture of wheel thrown pottery and of certain types of iron. The background to the arrival of these individuals was the developing network of exchange relationships which continued throughout the La Tène period, and, as I shall describe in the final chapter, were of central importance in the circulation of the slip decorated pottery. Production of the traditional local pottery continued throughout the 'Celto-Przeworsk' phase, probably in a domestic context, and, though these vessels did not enter the regional exchange networks, they do not seem to have declined in importance in local terms. Some similar type of mechanism was probably responsible for the adoption of La Tène material culture by the inhabitants of northern Slovakia during the Pre-Púchov phase.

La Tène material has been found sporadically on sites (frequently cemeteries) of the Przeworsk and other 'Germanic' groups in other parts of Poland (Wozniak 1970a), and these occurrences can most reasonably be interpreted as the result of exchange relationships similar to those which brought the first La Tène material to Małopolska. In these cases however there was no further local development leading to the adoption of new manufacturing techniques or working practices.

2.15 Settlement location.

In 1960 Jerzy Wielowiejski attempted a summary of the economic aspects of La Tène and early Roman period settlement in Southern Poland.

Although the number of sites known has risen since that time (Godlowski 1985), the basic pattern has not changed significantly and Wielowiejski's observation that the pattern of settlement is heavily orientated towards the best agricultural land has been confirmed by Woźniak (1970a, 1974). Where settlement did occur on poorer soils, it seems to have been in the areas with raw material resources such as the Swietokrzyskie mountains. The main area of settlement appears to have been in what Wielowiejski refers to as the 'steppe - sylvan zone', with loess or black alkaline soils, favourable climate and a sparse forest cover (the result of continuous settlement since the Neolithic). Rydżewski (1986), comparing the distribution of Tyniec group sites with the earlier Lausitz culture sites, has noted a considerable contraction of the area inhabited and a move towards the river valleys. Specific preferred locations were the sides of valleys between 100 and 300m above sea level. Woźniak (1974) considering the Vistula valley in particular, notes a preference for local topographically prominent features such as hills at valley mouths, terraces and raised promontories (illustrated in Figure 2.16), a preference that is also noticeable in the Liptov basin (Pieta 1982a). The open character of the settlements contrasts with the earlier Lausitz culture sites which were generally defended.

2.16 Production and exchange.

The general picture of La Tène settlement in Malopolska is one of settlements primarily concerned with agriculture, but also engaged in the production and exchange of manufactured goods and raw materials. There are no indications that agricultural production differed significantly from that in other parts of Europe at the same time. Excavations at Krzesławice, Tyniec, Mogiła and Pleszów have produced wheat, barley, oats, rye, millet, peas, vetch and buckwheat (Woźniak 1970a, Poleska and Tobola 1984, 1988). Animal bones from Krzesławice were predominantly of cows, but also included significant numbers of horse, pig, sheep/goat as well as smaller numbers of wild animals, including wild boar. Agricultural implements are also similar to those from sites further west, including rotary querns, scythes and sickles.

No site of comparable size or presumed function to Nowa Cerekwia in Silesia has yet been located in Malopolska. Instead it seems that settlement was based on groups of between two and four villages occupying

'micro-regions of four to five square kilometres' (Rydżewski 1986).

A number of villages have evidence of craft, as well as agricultural, production (Poleska and Toboła 1984) and there is only limited evidence of local centralisation. At Krzesławice, for example, three furnaces, a forge and a smith's workshop, together with crucibles and tools indicated the presence of iron smelting and working (Poleska and Toboła 1984, 1987, 1988). An unusually high proportion (78%) of the wheel thrown pottery was of the thin walled grey variety, and this, together with kiln wasters suggested that the inhabitants of the settlement also produced pottery (Poleska and Toboła 1988). A pottery kiln and a smelting furnace were found at Wyciąże, a second kiln at Podłeze (Potocki 1966, Woźniak 1970a) and perhaps a third at Mogiła (Woźniak 1960). Graphite fragments from Wielicka may have been intended as temper for local clay.

Further evidence of this decentralisation (which is paralleled by that seen in northern Slovakia and northwestern Bohemia) is the presence of iron slag on the majority of sites (Woźniak 1970a, 1982). The source of the iron ore seems to have been the nearby Świętokrzskie mountains, where there are abundant traces of prehistoric and early historic mining and smelting (Piaskowski 1966, 1970a, 1970b, Woźniak 1982). Some smelting almost certainly took place close to the ore sources, though the furnaces from Krzesławice and Wyciąże indicate that there was also local smelting, and it seems that iron was both smelted and worked on at least some of the settlements.

Two fragments of coin moulds, from Mogiła (Kraków) and Zakrzów (Niepolomice) indicate that coins were being minted by the end of la Tène D1, and were circulating together with those from neighbouring regions (Woźniak nd, 1978, Mycielska 1981, Wirska Parachoniak 1981, Nash 1986). The mould from Mogiła contained traces of electrum, one of the few examples of non-ferrous metallurgy from the area. The mould from Zakrzów is distinctive in that the fabric contains a high percentage of graphite and on this basis Wirska Parachoniak (1981) has suggested that it may have originated outside Poland. While this is certainly possible, the relatively common occurrence of fragments of graphite on Late La Tène settlements (and particularly that from Wielicka) means that local manufacture should not be ruled out.

Geologically the area to the southeast of Kraków is notable for the occurrence of salt deposits close to the surface. These outcrops and shallow deposits were extensively exploited from the Neolithic period onwards (Jodłowski 1971, Bukowski 1985). Up until the 10th century AD this took the form of the exploitation of saline springs and the extraction of salt by evaporation. Though salt springs occur in several areas of Małopolska (Bukowski 1985:43), some of the richest exist around the towns of Wielicka,

Barycz and Bochnia. Excavations at Wielicka (site XI) have revealed a well preserved Late Iron Age and Early Roman salt extraction site (Reguła 1969). This included settling and storage tanks, water channels, hearths and post holes, some of which may have supported a light roof. Large ceramic vessels and smaller goblets, apparently associated with the evaporation, storage and transport of salt have been found on this and other sites in the area (Bukowski 1985:56-8). The exploitation of the salt deposits does not appear to have continued at the same level of intensity throughout prehistory, (though there are inevitably problems with the survival of sites and possible shifts in the exact location of the extraction and processing facilities), and the first evidence for exploitation in the Iron Age, (following an apparent hiatus during the Bronze Age) dates to Hallstatt D. Bukowski has suggested that this was

> 'the result of the influx of foreign specialists, travelling from the south by the so-called Amber Route in the Early Iron Age' (1985:67).

He invokes a similar explanation, involving 'Celtic specialists', to account for certain technological changes in the process of salt extraction which occur in the Late Iron Age. The tendency to attribute innovation to the arrival of foreign groups possessing a specific trait, in this case a technology capable of increasing production, is one which is deep rooted in European antiquarian and archaeological thought, but is also one which has been demonstrated as inadequate on a number of occasions (Collis 1977:1). I have referred in section 2.9 to this tendency, specifically with regard to the relationship between 'Dacian' and 'Celtic' material in Slovakia, and would question Bukowski's explanation of the changes in salt manufacture on similar grounds. As I have noted above it is quite possible that new techniques and working practices were introduced to communities by individuals from outside, but such introduction requires a mechanism through which it can operate. There would seem to be no evidence to support Bukowski's assertion that 'Celtic specialists' were responsible for changes in the methods of salt extraction, particularly in view of the fact that those areas with which there is evidence of contact, were not areas in which salt was an available resource.

An alternative explanation would be to see the existence of the saline springs and the demand for salt from communities both north and south of the Tatra mountains as factors stimulating the development of extensive exchange networks. The importance of salt deposits and their exploitation in prehistory is amply demonstrated by the wealth of the salt rich area of the Austrian Alps which has given its name to the Hallstatt period (Wells 1984:79-88). Exchange relationships based upon the supply of salt may have constituted the media through which distinctive 'Celtic' artefacts and raw materials circulated,

subject to the nature of the economic system. I would suggest that the presence of the salt deposits were one of the factors in the development of the Tyniec group, not as the objective of a self consciously 'Celtic' group of specialist miners, but rather as a result of the existence of exchange networks which brought goods and perhaps people into the area, some of the latter bearing knowledge of new techniques of pottery and iron production. In this respect the Polish evidence is but one part of a wider and more complex picture.

In tangible terms the circulation of goods is represented by the normal mixture of raw materials and finished objects, though it seems that the latter predominate. Amongst the earliest La Tène material in Małopolska are the finds from the burials at Iwanowice. These include weapons bearing decorative motifs characteristic of the Danube area (Woźniak 1970a:Figures 29-31). Glass bracelets and beads have been found at Wyciąże, Szarów, Pleszów and Przemęczany (Woźniak 1970a), and, in the absence of any evidence of glass production it seems that these originate outside Małopolska. Three out of the eight brooches found at Krzesławice were imported from the south, two being Slovak types and the third an early imperial Noric-Pannonian type (Poleska and Toboła 1984). The commonest import at Krzesławice however was amber, originating in the Baltic, which was found in a number of features and appears to have been imported in lumps and worked into beads on the site. Bukowski refers to the occasional occurrence of *briquetage* on sites in other parts of Poland. It is to be expected that, given the difficulty of transporting salt over long distances, some lighter, and probably perishable, type of container would be preferred for this purpose, and thus the absence of concrete evidence of the trade in salt is unsurprising.

2.17 Summary.

The archaeology of Slovakia, Transdanubian Hungary and Southern Poland has been dominated by attempts to explain the data in terms of an ethno-cultural framework which has taken as unproblematic a link between material culture and ethnicity. In contrast to this approach, and with the intention of providing an alternative framework for analysis, I have reviewed the information relating to the organisation of settlement and the production and circulation of goods. It seems clear that, whatever the situation regarding the ethnic affiliations of the groups under discussion, there was a considerable degree of interaction between them and also with the communities west of the Bilé Karpaty hills and south of the Danube. I shall return to the questions raised by this interaction in the final chapter.

2.18 Conclusion.

In chapter 1 a number of approaches to the later European Iron Age were presented, together, in several cases, with general criticisms of their theoretical background. Having described the archaeology of the case study area I now intend to evaluate the various theories in more detail, with specific reference to the archaeological data from the study area as well as to the more general problems with the various approaches.

At the end of section 1.3 five questions were posed. The first two related to Nash's division of 'Celtic' society into two types, Agrarian and Warrior. The third concerned the view of Iron Age Europe as Peripheral to a Mediterranean Core and the fourth, connected with the third, concerned the role of exotic (Roman) goods in Central Europe. The fifth concerned the societies in Slovakia, Hungary and Poland, and the relevance to them of the Centre-Periphery and dependency theories. With the benefit of the data presented above, it is now possible to answer these questions.

The first question concerned Nash's category of 'Warrior societies', distinguished by their reliance upon the spoils of war and mercenary service for 'political expansion' (one meaning of which might be social reproduction). Examination of this question, in the Central European context, has implications for the second, which concerns the general validity of the division of Iron Age societies into 'Agrarian' and 'Warrior' societies.

Nash defines Warrior societies as having an agrarian subsistence base, though of a more pastoral, extensive and 'labour saving' kind than that found in the purely agrarian societies. The herds and flocks were, as well as a subsistence resource

> 'an important form of wealth necessary for articulating contractual relations among compatriots' (1984:100-101).

This perhaps owes something to ethnographic descriptions of East African groups such as the Nuer and Masai, for whom cattle are a source of wealth and play an important role in the circulation of goods and people within the society. Unfortunately Nash does not cite the source of her insight, and nor does she produce any evidence for the existence of a pastoral subsistence economy in the Late La Tène in Central Europe, beyond a passing reference to

> 'uninhabited defensive enclosures suitable for the husbandry of livestock' (1984:101).

To date no enclosures of this type have been located in Bohemia or Moravia. Though it is true that some of the oppida may have considerable areas of unoccupied space within their ramparts, there is no reason to assume that this was solely for the purpose of pasturing animals, or that such animals as might have been pastured there formed the dominant sector of the agricultural economy. Certainly the majority of rural settlements excavated do not appear to have been involved in a predominantly pastoral economy. The presence of animals, and their numbers (so far as these can be judged), are more compatible with a mixed arable/pastoral regime (section 2.2.1), as are the plant remains. This is not to say that in some areas animals may not have been more than usually important, and transhumant use of the mountains that border several major areas of settlement (the Šumava mountains, the Krušne Hory and the Česko-Moravske Vysocina for example) is a possibility, though in the absence of relevant field work, a hypothetical one.

A second major characteristic of the Warrior society is deemed by Nash to be the 'weakly developed internal marketing system' (1984:101) with a restricted development of craft production and circulation. She sees the exchange of goods as dominated by exotic and 'wealth goods', acquired during warfare or, in the case of the elite, through the exchange of captives and plunder, and suggests that

> 'large scale exchange of more commonplace manufactured goods for internal distribution or external trade was comparatively slow to develop' (Nash 1984:99).

In the absence of quantitative studies of material culture, it is difficult to decide upon parameters to distinguish 'weakly developed' marketing systems from 'strongly developed' ones, or even to be certain about the scale of the exchange of utilitarian items. In spite of this, the evidence that is available (section 2.7) suggests that the exchange of 'commonplace manufactured goods' (querns, iron ingots and, later, finished items and pottery) took place throughout the Iron Age. Items that might fit Nash's definition of 'wealth goods' (including sapropelite and glass rings and slip decorated pottery) were also in circulation, but by the later Iron Age the number of swords and other weapons, which might be expected to be of significance in a society dominated by warfare and competitive display, seems to have declined, and as Bŕeň has noted (1966:127), they are relatively rare on the oppida. An alternative to regarding non-utilitarian items as the gifts of warlords to their followers is to see them as circulating alongside subsistence related goods, and perhaps facilitating the exchange of the latter.

The mainstay of all theories which propose the dependence of La Tène (and Hallstatt) society upon the Mediterranean are the exotic goods (mainly wine and the accoutrements of feasting) which are

generally seen as components in displays of wealth by the elite. Though Mediterranean imports do occur in Central Europe (sections 2.7.1 and 2.12), they are so rare that they cannot be seen, realistically, as the basis of a social system, or as the evidence of a warrior elite maintaining its power either through their manipulation or by the prestige of being associated with foreign rulers. This is not to say that the possession of such goods was insignificant, but rather to suggest that, while they may have been symbolic of wealth or power, the source of such power lay elsewhere.

The evidence for political and territorial expansion, seen by Nash as the inevitable response to internal tensions created by the competitive nature of the warrior class, is ambiguous. Prior to the appearance of the oppida the settlement pattern was decentralised and, with the exception of the distinction between the *Gehöftsiedlungen* and the villages, apparently non-hierarchical. Though the oppida clearly represent some kind of centralisation, this is far from saying that they play a military or demonstrative role in an unstable and competitive society. Though far larger and more visually impressive than the rural settlements, they do not appear to have been the locations of the kind of ostentatious individual display that characterises earlier periods of the Iron Age. The undifferentiated domestic compounds and the absence of graves, which are characteristic of the Late La Tène, may simply mask the social inequalities that undoubtedly existed, but such discretion ill becomes the kind of flamboyant society that Nash describes.

While not seeking to judge the utility of Nash's theory to the societies in Western Europe, I would conclude that the characterisation of the late Iron Age societies of Bohemia and Moravia as 'Warrior societies', as she defines the concept, is inappropriate and is not supported by the data available.

Certain of the features of the category of Purely Agrarian societies are more appropriate to the case of the Central European Iron Age. The description of the major sites (cited above in section 1.3), the focus on the production and internal exchange of goods and the role of the peasant farmers who made up the bulk of the population all find general support in the archaeological record in Central Europe. Once again however the dependency upon the Mediterranean as a source of exotic and valuable goods flaws the argument. Without this motivation for production Nash's model collapses and we are left with a rather vague description of a complex, non-capitalist society, a description full of unsupported assertions such as 'Warfare in these societies was never a dependable source of external revenues' (1984:98), and 'internal marketing systems tended to develop early under noble supervision' (1984:97) to take but two examples. Overall, however well the data from Gaul and Southern Britain fits Nash's model, it cannot be

transplanted to Central Europe. The 'Warrior' economy that she claims exists there fails on almost every count to conform to the archaeological data, and the alternative, lacking its central motivation, becomes nothing more than a description, the most general parts of which correspond to the Iron Age situation.

The absence of evidence for extensive trade with the Mediterranean is also a fatal flaw in the Centre - Periphery and Prestige Goods models of Late Iron Age society. It seems unlikely that, in this case, the absence of evidence is accidental as most of the oppida have received at least some attention and the quantity of material is small even from Stradonice, Staré Hradisko and Třísov. In this case at least the evidence is, if not of absence, then at least of insignificance.

The feature common to all these models of Iron Age society is one of unequal exchange relationships between the Roman Empire and the 'Barbarians' beyond the frontier. There can be little doubt that this was indeed the situation in some areas (Barrett, Fitzpatrick and MacInnes 1989); the Empire was not a philanthropic institution, and its raw material and labour requirements are doubtless as great as have been estimated. The question that I wish to raise relates more to the strength of existing indigenous institutions. Whereas Western Europe pursued one path, that of contact, with all the implications which that path implies, Central Europe took another. Whether these societies deliberately rejected contact with Rome or whether such isolation was the result of distance is difficult to say, though it is quite possible that Rome had no need of contact with societies lying far beyond its borders when so many lay closer at hand and were accessible by sea. Whichever is the case the fact remains that in the 1st and 2nd centuries BC Central European societies and their institutions have to be seen as autonomous entities following their own paths and affected in only the most peripheral manner by the expansion of the Roman Empire. A similar conclusion has been reached by Brandt and van der Leeuw in their discussion of Iron Age settlement in the Assendelver Polders (1987:203-226). Here, although there were no oppida as such, a number of transformations occurred in the Late Iron Age, which involved an increase in settlement density and control over the natural and social environments and an increase in the differentiation of craft production. As in Central Europe this took place without the involvement of goods from the Mediterranean. Brandt and van der Leeuw conclude that:

> 'our present picture of the processes taking place in the Iron Age is heavily skewed, viewing the inhabitants of north-west Europe as passively undergoing 'influences' from elsewhere' (1987:226).

A more general critique of Centre - Periphery models is possible, one which has, to an extent, been made by Champion (1989:15, 1990). This is the degree to which a Centre - Periphery view of past economic relationships is conditioned by modern preconceptions of the importance of the Mediterranean as a core and, further, Greece and Rome as key nodes within this Core. His answer to this problem is too consider the Centre - Periphery model as a heuristic device (1989:14), of use in framing questions and providing a structure within which we can approach the past. Certainly one cannot disagree with this eminently reasonable point of view. Relationships between radically different societies are an enduring feature of human interaction, as are exploitation, domination and imperialism (whether considered as primarily economic or military). In certain circumstances a Centre - Periphery model may be of use. It is not however safe to assume that a situation which can be understood in such terms will arise inevitably. In the case of the Central European Iron Age I would suggest that the Western Intellectual tradition, with its strong links to a perceived Greek and Roman heritage, is predisposed to grant a privileged status to the Mediterranean region, even when this is inappropriate, as is the case in the present context (Cumberpatch:in preparation). In contrast to this, alternative possibilities and other heuristic devices have been overlooked.

The same problems arise in the case of Peter Wells' explanation of the situation in terms of entrepreneurial activity, problems which exist in addition to the more general theoretical and ethical problems raised in section 1.4.

The absence of evidence for trade with the Mediterranean during the formative period of the oppida (in the case of Central Europe, La Tène C2) must raise the question of alternative reasons for their existence and I would suggest that these lie in the nature of the indigenous institutions and their internal developments which were only marginally affected by the events that took place around the Mediterranean.

The fifth question posed at the end of chapter 1 concerns the societies of Slovakia, Transdanubian Hungary and Poland. These societies have generally received only scant attention in the English language literature and have certainly not been considered in connection with core-periphery or dependency theories. In fact nothing in the archaeological record from these areas makes Nash's or Wells' theories any more appropriate to them than these same theories are to the societies in Bohemia and Moravia.

As I have outlined at various points throughout this chapter, description and explanation currently take place within an ethno-historical framework which owes much to the 'Celtic society' view of the Iron Age prevalent in areas further west. In particular there has been a strong tendency to equate the central sites with oppida, on the grounds of the apparent functional similarities between the two types of site. I would argue that this ascription of privilege to function over form is a result of the same tendency towards the construction of a familiar Iron Age with an ancestral relationship to our own society that Hill has described in a British context (1989, in preparation). The archetypal oppidum is normally described in a way which presents it as a recognisable form of pre-industrial town (Collis 1984b:121-136), though one usually derived from Classical or medieval models (Collis' use of Sjoberg's cross-cultural perspective being unusual). The word 'oppidum' when used to describe what I have referred to as 'central sites' in the eastern part of the study area, represents more than the simple use of a convenient term to denote these sites. It implies that the societies in question were part of the 'Celtic world' with all the ideological overtones that such a statement carries. In contrast I would suggest that, while there do appear to be functional similarities between the sites themselves and with the oppida, there are major differences which the use of the term oppidum has obscured (Collis 1972). Generally speaking an apparent similarity of function has been taken as definitive, whereas form and the use of space by the inhabitants has been treated as secondary. This point can be developed more generally. The presence of La Tène material culture has obscured the individual nature of the Later Iron Age societies of Slovakia, Transdanubian Hungary and Poland, resulting in their designation as 'Celto-Dacian' and 'Celto-Przeworsk'. The precise nature of the relationships which existed with the societies to the west and southwest have never been explored from the point of view of any mechanism other than that of invasion/migration and from no other standpoint than that of the ethnic.

It is not my intention in the following chapters to attempt to provide a complete synthesis of the prehistory of these people, but I do hope to demonstrate that the situation is not one that can be understood simply in terms of the expression of ethnicity through material culture or in relation to the largely modern construct known as 'Celtic society'.

In chapters 1 and 2 I have presented a review of approaches to the Central European Iron Age and of the data relating to the study area. Having dismissed the principal current views of the period as being theoretically inadequate and poorly supported by the data, I now intend to suggest an alternative

procedure for interpreting that data. In the next chapter I shall review some of the approaches that have been taken to the analysis of non-capitalist economic systems and will show how one of these in particular can be of use in understanding the Iron Age in a way that respects both the individuality of the period as a whole and that of the parts of which it is composed.

Chapter 3

Archaeological approaches to non-capitalist economies.

3.1 Economic Anthropology and Archaeology.

In this chapter I shall explore some of the possible theoretical perspectives on the production, circulation and consumption of goods within non-capitalist economies and develop these primarily anthropological concepts within the constraints imposed by the nature of archaeological data.

Few, if any academic disciplines are without controversies, and economic anthropology is no exception. The major division, which arose in the 1960's, is between those who propose that the principles of neo-classical economic theory are universally applicable, and base their interpretations of non-capitalist societies on them, and those who disagree. The latter group hold a heterogeneous collection of views, but are unified by their distrust of neo-classical theory as an explanatory framework. In recent years attempts have been made to mediate between the two positions (Dowling 1979). The debate is far from being a new one, and has appeared in a number of forms and affected a variety of disciplines (Finley 1973, Morris 1986:3, Rowlands unpublished) since its origin in economics in the 1860's.

In this chapter I want to summarise briefly the opposing views and to discuss in more detail the approach that I think holds the greatest potential for my subject. The intention is not to rerun the earlier arguments, but rather to make my own position clear, as the debate which animated economic anthropology in the 1960's is still active in archaeology (Hodges 1982, Haselgrove 1988). In the latter part of the chapter I shall review the methodologies available for relating economic theory to the archaeological data.

3.2 Neo-classical economic theory.

Neo-classical economic theory (frequently known in anthropology as formalism, a name ascribed to it by one of its foremost opponents, Karl Polanyi) was born in the 1860's when writers such as Jevons, Walras and Menger began to deviate explicitly from the work of the earlier Political economists (including Smith, Ricardo and Marx). The change has been summarised by Gregory:

> The focus of economic analysis henceforth moved from the study of social relations of production, to the study of individual choice. The economic problem was redefined as the problem of understanding how universal economic 'man' allocated his scarce resources among competing and unlimited wants' (1982:26)

The formalist view of the human being was of an economising individual; one who sought to allocate his or her limited means so as to maximise the return in accordance with a series of ranked goals. This is not to imply explicit rationalisation of all decisions - for the individuals concerned much would remain unacknowledged. The formal method was devised to make sense of the complex and chaotic reality of human life. It was the observer, the economic analyst, who would draw out from the data the underlying logic of decision making in terms of the principles of 'economic behaviour'.

Formal theory was devised primarily to study the economies of capitalist nations and their empires, and, as anthropology developed an interest in the economy of non-capitalist societies, it was natural that economic theory should be enlisted to explain the economic organisation of these societies, which, it was quickly realised, differed in significant respects from that of capitalist societies.

> Although different writers developed their own characteristic approaches to the problem
>
> 'the unifying element among the formalists is, in contrast to substantivists, the partial or total acceptance of the cross-cultural applicability of formal theory' (Schneider 1974:9).

In the context of anthropology Burling defined economics as

> 'the study of the allocation of scarce means to multiple objectives' (1978:176)

and placed the emphasis firmly on the study of allocative behaviour. This was acknowledged to go beyond simple material allocation and extended to such intangible elements as pleasure, leisure and love. From this point of view society becomes a collection of choice-making individuals, seeking to maximise certain goals (Burling 1978:177). This leads to the first of the criticisms of formal theory, (Gosden 1983:10), for if we are to consider all acts involving or potentially involving allocation as within the scope of economic theory, then the field becomes so wide that it threatens to encompass all aspects of human behaviour and thus ceases to be a practical method of investigation.

More seriously the use of a general principle of allocation for the purposes of maximisation prejudges the nature of human action in projecting allocative behaviour as a universal motivating force. Were this to be presented as a hypothesis for examination and testing then it could be justified, but as a predicate requiring only description in terms of formal theory it actually hampers investigation. Some writers have partially acknowledged this (e.g. Schneider 1974:10), but have still held it to be a useful assumption upon which to base explanations. As maximisation is held to be an absolute attribute of humanity rather than a variable, the demonstration, by authors such as Sahlins (1974) and Gregory

(1982), of circumstances under which behaviour is not orientated towards maximising ends, leaves the neo-classical method with serious problems. Some of these can be coped with by theories of distortions (Gregory 1982:27), or by postulating maximisation of other aspects of life beyond the material (leisure, pleasure etc.), but these seem to be strategies for coping with problems in the basic theory, rather than an integral part of it. The predicate (maximisation) is given and ways are sought to explain the data with reference to it rather than through the generation of new basic hypotheses.

A further problem with neo-classical theory is that it fails to explain the variety of institutions that constitute human societies. The focus on the nature of humanity at a psychological level and the postulation of an absolute as an explanation for behaviour, means that the theory has no explanatory power at the institutional level. Given an underlying motivation such as maximisation, only materialist or functionalist explanations can be invoked to explain the existence of the wide variety of social institutions (Donham 1981:259).

This is not to deny that the study of allocative behaviour is a legitimate one. Life does, after all, offer alternatives amongst which choices can be made. The question here concerns the extent to which the study of allocation, as defined above, will shed light on the social institutions and relationships present in societies which do not employ the categories of logic and rationality common to Western, capitalist thought. In the following sections I shall describe a number of alternative approaches which strive to avoid the imposition of such ethnocentric values.

3.3 Non-Formal Approaches.

Alternative approaches to the economy have somewhat less cohesion than the formalist/neo-classical approach. They are however united in seeing the economy as deriving from necessity, but being organised in historically and culturally specific ways. Clearly such a view is diametrically opposed to a view that ascribes priority to the principle of maximisation. The aim of the various non-formal approaches is the explanation of the various forms that economic organisation has taken in the past and takes in the present. Assumptions about the motivation underlying economic behaviour are certainly present, but are subordinated to the consideration of the rationale underlying the existence of specific formations.

The principal schools of thought involved are Substantivism, Marxism and Political Economy. There are divergences of opinion within these broad groupings (particularly within Marxism), and it

would take a considerable amount of space to discuss each in detail. For this reason I shall give only a brief outline of the main tenets of Substantivism and Marxism, reserving detailed discussion for Political Economy which, for reasons which I shall discuss below, offers the greatest potential for application within archaeology.

3.3.1 Substantivism.

Karl Polanyi, who coined the term 'substantivism', saw the terms 'economic' and 'economizing' as embodying two rather different concepts, one which he dubbed 'formal economics', which referred to neoclassical theory, and a second which he called 'substantivism'. This he described in the following terms

> 'The substantive meaning of economic derives from man's dependence for his living upon nature and his fellows. It refers to the interchange with his natural and social environments in so far as this results in supplying him with the means of material want satisfaction' (Polanyi 1971:243).

Polanyi drew a distinction between the formal meaning of the term economic, which he felt derived from the logical study of a specific economic formation - 19th and 20th century capitalism, and the substantive meaning which he saw as having no connection with it. He defined the difference precisely

> 'The two root meanings of 'economic', the substantive and the formal have nothing in common. The latter derives from logic, the former from fact. The formal meaning implies a set of rules referring to choice between the alternative uses of insufficient means. The substantive meaning implies neither choice nor insufficiency of means; man's livelihood may or may not involve the necessity of choice and, if choice there be, it need not be induced by the limiting effect of a 'scarcity' of the means ... The two meanings could not be further apart; semantically they lie in opposite directions of the compass' (Polanyi 1971:243-4).

Only the substantive meaning was, in Polanyi's opinion, a suitable framework within which

> 'all the empirical economies of past and present' (Polanyi 1971:244)

could be studied. The outline of the substantive approach was laid down by Polanyi in his paper '*The Economy as Instituted Process*' (1971).

To explain the functioning of non-capitalist economies Polanyi defined three 'forms of integration' (1971:250) which he termed reciprocity, redistribution and exchange. These referred to the exchange of goods but situated this exchange within particular social contexts.

> 'Reciprocity denotes movements between correlative points of symmetrical groupings; redistribution designates appropriational movements towards a centre and out of it again; exchange refers here to vice-versa movements taking place as between 'hands' under a market system' (Polanyi 1971:250).

Not only are these three types of exchange economic units, they have implications beyond the spheres of production and exchange, to the extent that Polanyi felt able to use them as the foundation for a classificatory scheme.

> 'Reciprocity ... assumes for a background symmetrically arranged groupings; redistribution is dependent upon the presence of some measure of centricity in the group; exchange in order to produce integration requires a system of price-making markets' (Polanyi 1971:250).

Polanyi drew a further distinction between capitalist and non-capitalist economies, referring to the relationship between the economy and the social structures involved. He used the term 'embedded economy' to refer to one in which economic structures were firmly located within non-economic structures, such as family or kinship groups and which take their rules from these social formations. The disembedded economy, on the other hand, is one in which the economy is separate from social institutions. It is this disembedded character that enables the modern economist to study 'the economy' in isolation from the social context. Clearly in an embedded economy this is impossible as study of one aspect demands that attention be paid to the other.

Polanyi never fully investigated the workings of his reciprocal and redistributive levels of integration, but this was taken up by Marshall Sahlins (1974). Among Sahlins' concerns was the sociology of exchange in non-capitalist societies. Starting from the assertion that

> 'even in its strictly practical side exchange in primitive societies has not the same role as the economic flow in modern industrial communities' (Sahlins 1974:187),

he proceeded to analyse and illustrate in greater detail Polanyi's categories of reciprocity and redistribution. This analysis has proved enormously influential in archaeology, and the link made between reciprocity and redistribution and certain types of social formation has been the basis of a number of analyses of archaeological situations.

From this discussion it should be clear that there can be no simple linkage between the substantivist and formalist positions. The one postulates an absolute as the basis for a type of behaviour

prejudged as 'economic', the other offers a scheme derived from empirical study of behaviour and institutions and advocates methods of analysis that

> 'are relevant and sensitive to the particular social and economic structure that they are designed to investigate' (Gosden 1983:18).

The substantivist viewpoint has itself been the subject of various criticisms. These have been discussed by Gosden (1983:18-21). The first criticism, and the easiest to refute, is that substantivism is an idealistic scheme based on the naive replacement of self interest with altruism as a determinant of human action. As Gosden comments (1983:18) this seems to be a misreading of the substantivist position, as to assert that maximisation is not, of necessity, the origin of human action is far from postulating universal altruism. A more reasonable reading of the substantivist position would be to suggest that it asserts that self-interest can be served in ways other than through maximisation.

A second criticism comes from the adherents of Marxist anthropology (whose views are summarised below), and this is altogether more serious. Briefly the objection is not that substantivism is 'wrong', simply that the level of analysis is too superficial. Gosden summarises the position thus

> 'the theoretical apparatus of substantivism is insufficiently developed to lay down rules specifying the integration of different aspects of economic systems and is only able to note surface differences and similarities' (Gosden 1983:20).

The surface differences and similarities may in fact mask important structural differences between systems. Marxists, with their traditional focus on the inner workings of economic systems, see any method that does not take this viewpoint as inadequate and misleading. In part this criticism is of those who have followed Polanyi and have been content to classify societies according to the categories that he proposed, without developing more profound analyses of these categories. An exception to this, Marshall Sahlins, has shown that the substantivist framework is capable of supporting analyses of greater rigour with his discussion of reciprocity (1974), but such work is rare.

3.3.2 Marxism.

It is not my intention here to attempt to offer a complete survey of the whole field of Marxist anthropology. Adequate reviews and empirical applications already exist (including Hindess and Hirst 1975, Godelier 1978, Seddon 1978, Harris 1980, Kahn and Llobera 1981, Bloch 1983, Shennan 1986), and it is sufficient here to point out the general line of approach of the Marxist school and to note the

dangers of trying to summarise the main tenets of a philosophy notorious for the depth of its divisions and the virulence of its disagreements. The next section, on Political Economy, will involve a more detailed discussion of parts of the Marxist model and subsequent sections will present a re-evaluation and redefinition of certain Marxist terms and concepts.

The Marxist approach to human society is based on a concern to describe and understand the way in which production and the organisation of labour relate to other aspects of the social formation. Rather than identifying a specific economic sphere of activity as neo-classical theory does generally, and substantivism does specifically for capitalism, the Marxist writers see societies as complex entities sharing a common basis. This common basis is production which, through labour, acts to transform the natural world into socially useful or necessary products. If this were the end of the matter, Marxism would differ little from certain varieties of cultural materialism. This is not the case however as the analysis of the nature of the institutional arrangements in different societies is central. Social institutions are not seen as determined by the character of the natural world, but rather have an interactive relationship with it.

For a society to reproduce itself its needs must be met by the labour of its members, either producing for their own consumption, or for exchange with other groups. Central to the understanding of this process is the concept of 'mode of production'. Like many of the tenets of Marxism this has been subject to frequent reinterpretation and redefinition. As it is central to the understanding of the process of production it will be discussed in more detail in section 3.5.1. For the moment it is enough to note that conventional formulations focus on the relationship between the forces of production (the act of work itself together with the tools and techniques employed) and the relations of production (the social relationships involved, including such things as rights of access to the forces of production, ownership of the goods produced and the way in which goods are distributed amongst the population), (Gosden 1983:25, Hindess and Hirst 1975:10-11). This is not to say that the form of society is governed by these relationships, for also included in the mode of production and existing within a complex process of determination and counter-determination, are rules such as kinship, religion, ideology, political and legal systems. The question of determination 'in the final instance' (Balibar 1970:216, Hindess and Hirst 1975), which refers to the definition of a single determinant of social forms (and in practice the extent to which this is the economy, affected to a greater or lesser extent by social or ideological constraints)

seems never to have been adequately settled and it can be suggested that this is due to the complexity and potential variability of the inter-relationships which exist at a structural and institutional level.

In spite of the disagreements that exist at many levels within Marxism, there is a general consensus of opinion that production is the fundamental component of any society and that it is the nature of the articulations with other infrastructural and superstructural components which will affect (or determine) the nature of the social formation and its institutions (Godelier 1978, 1982).

Certain objections to Marxism may be picked out for commment. The most fundamental of these is that Marxism is a form of economic determinism. While this may be true of some strands of Marxist thought (usually stigmatised as vulgar materialism), it is a charge that can equally be made against other social theories (cultural materialism for example) and is anyway untrue for much of Marxist thought. While the exact relationship of the economy to the rest of society may be a difficult problem, it is a far from insuperable one and the importance attached to the social relations of production by writers such as Godelier is at once an acknowledgement of the problem and an attempt to solve it (Gosden 1983:29). The idea of 'necessary labour' incorporates not only the production of a subsistence minimum, but also of the production of all goods necessary for human action within a given social environment.

Karl Marx's original concern was an analysis of 19th century European society. In order to do this he departed from certain of the conventional modes of explanation of his time. A relatively small part of his entire work was concerned with non-capitalist societies (Marx 1965), and the data available was inevitably of poorer quality than that available today. He was however working within the field of Political Economy (Gregory 1982) with its assumption of the historical specificity of social and economic formations. His formulation of the capitalist mode of production is specific to the society for which it was devised. Other modes of production, though less satisfactory in their details, clearly address different societies in terms of different constraints and rationales. This has enabled contemporary Marxist scholars to find common ground with the substantivist theorists as far as certain basic frameworks are concerned. Their differences are at the level of deeper analysis where it seems that Marxist theory with its emphasis on the economic and social structures (and, crucially, their inter-relationships) offers a more satisfying analysis than does substantivism.

3.3.3 Political Economy.

Underlying both the substantivist and Marxist approaches to non-capitalist economies is an agreement that the methods and assumptions used to study capitalist, market based economies are not necessarily appropriate to the study of non-capitalist economies. This is more than a matter of alternative methodologies and relates to the different premises with which the two approaches start. The shared starting point of both Substantivism and Marxism (the historically specific nature of individual social formations) derives from a common origin in the school of thought known as Political Economy.

C.A. Gregory has recently re-examined the work of the original Political Economy theorists (David Ricardo, Adam Smith and Karl Marx) together with that of Piero Sraffa, and has produced an effective and useful critique of their work, linked with that of anthropologists, notably L.H. Morgan, Claude Levi-Strauss and Marcel Mauss. The theoretical framework that Gregory has used to investigate contemporary Papua New Guinea has been applied to archaeological case studies (Bradley 1985, Morris 1986, Gosden 1989) with interesting results.

Gregory's work resolves many of the conflicts between Substantivism and Marxism, by locating them within an intellectual tradition that predates both of them, a tradition that takes the historical specificity of social formations as its starting point.

In the following sections I intend to provide a brief summary of Gregory's work (1982) and to pick out the main strands that make it particularly useful in the study of the Late Iron Age.

The chief characteristics of the Political Economy approach can be summarised as a series of points.

The first of these derives from the statement made by Karl Marx

> 'that commodity exchange is the exchange of alienable things between transactors who are in a state of reciprocal independence' (Marx quoted by Gregory 1982:12).

This statement defines one end of a continuum of economic types, the other being the corollary, never actually articulated by Marx, but clearly implicit. Gregory's definition runs

> 'non-commodity (gift) exchange is the exchange of inalienable things between transactors who are in a state of reciprocal dependence' (Gregory 1982:12, cf. Morris 1986:2).

This continuum has, and can have, no counterpart in neo-classical theory as it derives from wholly different premises. The gift exchange economy is based on a concept of ownership which does not exist

in a commodity economy. An exchange of gifts moves the objects spatially, but rights to the objects remain with the donor, and the object of exchange is thus said to be 'inalienable'. Exchange of commodities not only involves the spatial movement of the items, but also a transfer of rights over the items so that they are said to be 'alienable'. Following from this are consequences for the relationships between people. Whereas commodity exchange establishes a relationship between the objects exchanged, the giving of gifts establishes a relationship between the individuals giving the gifts. Their inalienability implies that the object can never actually be given away and that a link remains between donor and recipient. This link is one of debt. The giving of a gift sets up a relationship of dominance and subordination. As gifts are related to each other by rank rather than value (see below) the relationship cannot be reversed by the return of an equivalent gift. Rather the return gift sets up a further debt relationship. This is the underlying principle of a gift economy and will be discussed in more detail below.

The second characteristic of the Political Economy approach concerns the nature of social control exercised over the means of production, including land (Gregory 1982:13). The social institutions that permit the sectional control of the means of production are seen as historically specific. Analysis of these institutions will therefore be relevant only to the given case. When other historical circumstances apply, new models of control and social relationships must be formulated. Understanding of the way in which this control is organised and institutionalised is therefore central to the analysis of any society. Gregory summarises this by commenting that

> 'theories within Political Economy have a planned obsolescence' (1982:13).

The third defining characteristic is a circular model of production and consumption. In place of a linear 'flow model' from production to consumption via distribution and exchange, Marx argued for a model of the economy in which consumption, production, distribution and circulation were elements of a totality, with production as necessarily predominant. Not only were they linked by bonds of dependency, but also by more fundamental bonds. These are captured in the terms 'productive consumption' and 'consumptive production'. Productive consumption refers to the fact that production implies consumption because labour and materials are consumed during the production process. The two processes are indivisible. They are doubly indivisible because consumption is necessary for reproduction, most obviously in the biological sphere. For human beings to reproduce (and thus for social formations to

reproduce), consumption of food is essential (with all the consumption of materials which that implies). This process is termed consumptive production (Gregory 1982:30-31). Gregory uses the terms 'objectification process' and 'personification process' to refer to productive consumption and consumptive production respectively in order to make the close relationship of things and people in terms of production and consumption clear.

The fourth characteristic relates to the method of enquiry. Gregory terms the method he advocates the 'logical-historical' method. This involves the abstraction from the data of a series of general categories, linked by some unifying principle. Gregory uses the equality with which land is distributed amongst the population or, in other words, the relationship of the producer to the means of production as such a principle. In archaeological terms this should be distinguished from the search for general principles or laws of human behaviour which characterised some branches of the 'New Archaeology'. If social formations are historically specific then the logical historical method is simply a heuristic device, though, being founded upon production, one of enormously wide applicability.

These then are the defining characteristics of a Political Economy approach to the analysis of society. Gregory develops from these a framework of analysis which includes a set of principles upon which the analysis of any given social formation can be based. Deriving from a discussion of the work of Marx and Lévi-Strauss, these can be summarised as follows (Gregory 1982:33):

1) The production, consumption, distribution and circulation of things and people are elements of a totality, not autonomous spheres.

2) It is not necessary to consider one part of the social formation as dominant - historical conditions will produce relationships of subordination and dominance according to circumstances, but this is empirical rather than conceptual. The question of determination 'in the last instance', so long a central point of contention in Marxist theory, becomes a function of the historical situation.

3) Production is an objectification process whereby labour is converted to objects, while consumption is a personification process permitting the survival of individuals through nourishment and the survival of the group through sexual reproduction.

4) Specific historical processes of reproduction are defined by examining the appropriate historical evidence of the distribution of the means of production between groups of people.

On this basis Gregory is able, using data from anthropology and European social history, to present a logical-historical sequence of types of economies. This is actually a continuum from clan-based societies to class-based societies. Equality in terms of access to land and unity of the producer with the means of production in clan-based societies gives way to inequality in access and separation of the producer from the means of production in class based societies (Gregory 1982:36-37). Within the broad categories of clan- and class-based societies are a number of sub groups. Within class-based societies these are related to the method of transacting labour. At one extreme is a slave-based society within which productive labourers are transacted as alienable commodities, and at the other a capitalist society in which labourers must exchange their necessary labour for money wages. Clan- based societies are equally as complex and as variable, and Gregory uses rights over communally held land and the organisation of exogamy to produce a taxonomy ranging from the simplest dual clan system to complex confederacies (1982:38). As I shall describe in section 3.4, historical and archaeological information has suggested that this concept of a continuum of types of society is rather too simple (Morris 1986), and that forms of gift exchange may have continued as important elements within societies that were otherwise characterised by class relationships.

3.3.4 Circulation.

Fundamental to an understanding of circulation is a development of the proposition, stated in the previous section, that the exchange of commodities is the exchange of alienable things between independent transactors. This exchange creates a relationship between the objects transacted. Gift exchange establishes a relationship between the transactors as the items exchanged are inalienable. A number of factors will affect the nature of the exchange. Those picked out by Gregory (1982:42-55) include the social status of the transactors, the social status and social role of the objects, the spatial and temporal aspect of the exchange, the motivation of the transactors and the relative status (ranks) of different types of gift.

The social status of the transactors relates to the degree of 'distance' in terms of kinship and sometimes acquaintance, between individuals. An individual will have a different relationship with close kin than with a stranger and this will affect the nature of any transaction. In one example, cited by Gregory, from East Africa transactions between strangers were marked by 'strict pecuniary relationships' whereas between kinsmen pecuniary value was less important than the social relationships that were

maintained through exchange (1982:42). The social status of the objects refers to the nature of the objects that are being transacted. Whereas in a commodity economy there is a marked distinction made between people and objects, this is not necessarily so in a gift economy. Human beings can enter the same system of exchange relationships as objects. As the concept of alienability is absent there is no suggestion that the exchange of women (for example) is akin to the slavery that can occur in some types of commodity economy. Conversely objects can be anthropomorphised. Gregory cites examples of pigs and canoes in Papua New Guinea. This is not to suggest a primitive utopia; forms of social control are potentially as iniquitous in a gift- based economy as they are in a commodity economy; it is simply that they spring from different sources.

The spatial and temporal aspects of exchange bring out the further differences between commodity and gift exchange. Commodity exchange takes the form of a direct exchange of items. One unit of X is exchanged for one unit of Y, the two being equated with reference to each other or some neutral standard of value. When gifts are exchanged the giver retains ownership, and the recipient, though he or she has the use of the object is in debt to the donor. The simultaneous giving of a gift the other way will set up a second debt relationship because the objects are not comparable. The relationship is between the donors and not the objects.

The relationships between objects in a commodity economy (denoted by the term value) rest upon the equivalence of unlike objects. Some common measure (such as money) is normally employed to link the two. Gift exchange establishes an unequal relationship of domination between the transactors (1982:47) where the giver is superior to the recipient. The nature of the domination is empirical, depending upon the circumstances, and can range from an increase in prestige to actual political control. The rank of the gift will determine which party gains most from the exchange. Gift ranking has been noted in a variety of situations and Gosden (1989:Table 2) has set up a general scheme (reproduced as Table 3.5), although the items which are actually included in each sphere will depend on local geographical and historical conditions. Gifts are ranked on an ordinal, rather than a cardinal scale (Gregory 1982:47-51) so that the objects have exchange order rather than exchange value. Thus a high ranking gift is not equal to two (or any number) of low ranking gifts. The donor of a high ranking gift remains superior to the debtor irrespective of how many low ranking gifts he or she receives in return. Gifts will circulate within their own spheres of exchange, each with its own set of social relationships.

As mentioned above the act of gift exchange sets up, or confirms, relations of dominance and subordination. This is the key to understanding the motivation of transactors. Unlike the individual in a commodity economy whose motivation is the long-term accumulation of goods, the individual in a gift economy will be looking to acquire a large a following of debtors as possible, as such individuals will be bound to him/her by inescapable obligations.

Such gift giving is far from the altruistic donation that neo-classical writers allege that substantivism proposes. Indeed it is rather the opposite and the creation of debt is simply an alternative strategy in the acquisition of social power to those found in class based societies. The networks of debt can be extremely complex as a successful chief or 'big-man' will be at the centre of an interlocking web of debt relationships. It is from the management of these webs that the individual derives power. Gregory comments that

> 'the career of a big-man is critically dependent upon knowing those obligations to honour and those upon which to default' (1982:59).

At the intra-clan level arrangements may be somewhat different, and the organisation of gift giving may be rearranged, so that, for instance, the giving of a particular item of food will be used to reinforce status differences within a family group rather than to impose debt obligations.

The aspect of the circulation of goods which has attracted the most attention in the archaeological world is the destruction of high ranked gifts (Bradley 1985, Morris 1986). A strategy of destruction is one of the methods available to a big-man or chief whereby he can reduce the stock of circulating gifts and enhance his own prestige. Needless to say there must be some established practice or institution (such as feasting or burial) through which such actions may be organised. A practical consequence will be that the reduction in the stock of circulating gifts will reduce the ability of rivals to challenge the position of the individual conducting the destruction.

The principles that apply to the circulation of objects may also apply to the circulation of people. Gregory discusses this in some detail (1982:62-70), as it is clearly of central importance in his case study. Though evidence for such practices are extremely rare in archaeological situations it is important that their potential existence alongside those involving archaeologically recoverable material should be acknowledged as a principal component of any given exchange system.

3.3.5 Production and Reproduction.

Considering the processes of production and reproduction, Gregory again draws a contrast between the processes of consumption involved, on the one hand, in the reproduction of commodities, and on the other, in the reproduction of gifts. The reproduction of things once again parallels the reproduction of people.

In a commodity economy production is dominant and the organisation of consumption is relatively haphazard. In a society organized around a principle of gift exchange, consumption is of much greater importance. This is reflected in the symbolism associated with the consumption of food, which, as Gregory demonstrates

> 'is primarily associated with the regulation of relations between people in the process of social and biological reproduction' (1982:79).

The reproduction of the society is regulated by rules concerning marriage alliances and the exchange of individuals (historically usually women), which are connected both symbolically and practically with the exchange and consumption of both food and other gifts.

Concerning the methods of production, which are the most directly perceptible aspects archaeologically, Gregory is rather vague, and deals primarily with food production. At a general level he notes

> 'In a gift economy ... profit maximisation is not the motivating force. It is the method of consumption of gifts that provides the key to understanding production and exchange. Thus the motivation underlying self replacement springs from the sphere of production. The methods of production of thing gifts are therefore governed by the ideology of consumption: land, labour and the products of the land are personified in terms of metaphors drawn from this sphere, not objectified as 'wages', 'profits' and 'prices'. Gift production must be understood as the process of production of symbols for use in the sphere of consumption. It has a twofold aspect; on the one hand it is the production of food for intra-clan consumption, on the other hand it is the production of things for inter-clan gift exchange'(1982:91).

Gregory gives examples of the production of food - examples that demonstrate the personifying nature of the process. Items of food are given genders and 'souls'. Their reproduction is organised as though they were people. The technology of production is treated only briefly but certain important points are made, which can be summarised here.

In a gift economy the profit motive is non-existent and there is no motivation to increase the efficiency of production once social needs are met. Output maximising technology and the optimal use

of land or other resources will have no particular benefit as the accumulation of goods is of minimal importance. Indeed the adoption of such technology is likely to be restricted if it is perceived as posing a threat to the established system of production for exchange and the imposition of debt relationships. A similar impulse will lead to the development of constraints upon production and access to the means of production as methods of social control.

Gregory cautions against attempts to 'read off' the organisation of reproduction of individuals and the group from the method of production, noting that there is only a very general correlation and that

> 'in any case, one society tends to employ a variety of techniques of production simultaneously' (1982:93)

a point that will be dealt with in more detail in the following sections.

3.4 Archaeological applications and implications

Amongst the first applications of Gregory's work to archaeological data were those described in papers presented at a seminar held during the Theoretical Archaeological Group conference at Cambridge in 1984 (Parker-Pearson and Bradley 1984, Bradley 1985, Morris 1986). The reaction was generally one of interest in an approach that offered a counterpart to theories of value, including that of Marx, which had been developed in a capitalist context. Though Gregory's analysis of the situation in Papua New Guinea was seen as offering a number of fundamental insights absent from both Substantivist and Marxist theory, both Bradley and Morris proposed modifications based on the archaeological data.

Bradley, following Gregory's observations on the different social statuses of transactors (1982:42), suggested that the same objects could have functioned as both gifts and commodities depending upon the relationship between the individuals involved in a particular transaction.

> 'the same object could change its character in relation to the social distance between those exchanging it. What may be a gift within the social group can be a commodity when it passes between strangers (1985:694).

Using examples drawn from Bronze Age hoards, Bradley drew a distinction between votive hoards and founders' hoards, seeing the first as gifts (to the gods) and the second as the deposit of objects exchanged as commodities.

Ian Morris applied the Political Economy approach to the case of Archaic Greece (1986). Noting that Gregory's logical-historical categorisation of societies stresses the clan to class continuum, he

pointed out that the position of households in Greek society was essentially determined by their political status as free or unfree, citizen or alien.

> 'Both kinship and class in Marx's sense could contribute to deciding the membership of these political groups, but ancient Greece belonged to neither the clan nor the class end of the scale, nor to any intermediate position in between' (1986:4)

Using literary evidence he identified a pattern of gift exchange involving highly ranked gifts which appears to have been the primary form of exchange even as the institutions of the state were developing (1986:7). He continues

> 'As the scale and complexity of the state grows, the relative positions of the gift and commodity are likely to change, but personification of transactors and the transacted objects through long-term social relationships and the gift is not purely a primary feature of clan societies' (1986:7)

The archaeological analysis of the Greek case rests upon the deposition of metal goods (which the literary sources suggest were the most valuable of gifts) in contexts that can be interpreted as the results of deliberate destruction. These contexts are initially graves and, after 750 BC, sanctuaries. The precise details of the case study are not of direct relevance here, but the implications are of considerable interest and are summarised by Morris as follows

> 'the literary evidence from Archaic Greece suggests that some of the ethnographically derived models of the relationships of forms of subsistence and social organisation to exchange need to be modified in the light of historical data. Gift exchange could be very important even within state societies. I have further suggested that while the archaeologist can only observe gift exchange indirectly, through contexts of the destruction of wealth, it is nevertheless possible to infer the presence of the gift and restricted spheres of exchange from the distribution of artefacts, and to attach very considerable importance to changes in the contexts of the deliberate disposal of high-ranked gifts' (1986:13).

A similar point has been made by Gosden

> 'Archaeologists ... have been passive consumers of historical and anthropological work ... Archaeology should not be isolated from other areas of social thought and can tackle the same general questions as anthropology and history, but using its own data and perspectives. When dealing with a totally unknown past we need a place to start from; anthropological or historical ideas are as good a place as any. However the starting point should not also be where we end up. For instance, when dealing with the prehistoric social forms it is often a habit to take modes of production (the lineage and feudal modes of production are two favourites) and manipulate the archaeological data to fit the model. The model is changed very little in the process and very little is learned' (1989:357)

Gosden has used the principles of Political Economy to describe the changes in society and economy in southern England between 1500 BC and AD 43. He has characterized the period as one which sees a change in economic relationships from those based on debt relationships and consumption to those based on investment, commercial exchange and return (1989:Table 2), a change from a clan-based to a class-based society. He ascribes this change to the collapse of the network of long distance exchange of copper alloy goods at the end of the Bronze Age:

> 'The introduction of iron may have been the cause of the decline in long distance exchange, which moved mainly fine bronze objects, or alternatively the change may have been due to a decrease in the bronze supply ... Changes occur in patterns of exchange and consumption, as there was no longer a widespread network of gift exchanges providing a wealth of fine bronzes to be ostentatiously thrown away. With the decline in conspicuous consumption it is possible that a greater emphasis came to be placed on local economic management than before' (1989:378-9).

Gosden placed this change in the Early Iron Age:

> 'The early Iron Age thus sees a crucial changeover from a system in which conspicuous consumption was the dominant means of creating social status to a situation in which investment in production played a more central role in the elites' strategies' (1989:379-80).

By the Middle Iron Age (250-100 BC):

> 'Much production is no longer aimed at creating debt but is designed to bring a material return which can be invested in further production. A new cycle has been closed, linking production, exchange and economic return. Although gift giving and debt relations still existed they are no longer central to social and economic life.' (1989:380-1).

By the Late Iron Age (100 BC - AD 43):

> 'All the indications are that ... a principle of value had emerged. Value provided a central term linking production, exchange, consumption, and ownership in new patterns round a principle of accumulation' (1989:382)

Gosden describes the emergence of a principle of value as being characterised by a change from local autonomy in the production of a range of goods to greater centralisation and specialisation (1989:380).

These trends continue and intensify in the Late Iron Age, with an intensification in agricultural and craft production based on

> 'specialist centres with a high output of pottery and metal, covering large areas of distribution' (1989:381).

The settlement pattern changed, with the hillforts replaced by lowland oppida, which were primarily centres of production and exchange. Gosden follows Collis' suggestion (1971) that the distribution of copper alloy coins indicates their use in commercial, low value exchanges, effectively the use of cash for day to day transactions. Domestic self sufficiency had declined to a point at which households were dependent upon central points of supply for their everyday needs. Gosden sees the lowland oppida as having the character of towns; centres of production and exchange with a partially non-agricultural population. Social relations were no longer based primarily on kinship, production and exchange being in private hands, as, at least partially, was land (1989:382).

The changes in the organisation of production which Gosden describes (1989:Table 2) can be summarised as involving an increase in elite control of lower ranks of goods as the system of gift exchange and debt obligations gives way to an economy based on a system of value.

The principles which govern the circulation of goods in a gift economy will be discussed in more detail in section 3.10, but can be summarised here. Typically goods with the lowest gift ranks (including agricultural products) will circulate relatively freely at an intra- and, sometimes, inter-community level, while the circulation of gifts of the highest rank will be strictly controlled by the elite groups. These objects will be employed in the creation and negotiation of those debts which will be of the greatest inter-community and regional significance, structuring relations between the elites of different communities. Those goods ranking between the lowest and the highest will structure relationships within communities. As the system of debt relations changes to one of value, goods from the lower gift ranks will become subject to greater control, but control over the lowest ranks of goods will only occur in the full sense when elite control is extended to include the private ownership (or control) of land.

In Gosden's case study the change to a commercialised economy was marked by a breakdown in the patterns of distribution visible in the Bronze Age, with hillforts first becoming central to the patterns of distribution of goods, and subsequently being supplanted by the lowland oppida. With an increase in the commercialisation of the economy, local self sufficiency in food and everyday objects was eroded and the role of centralised production centres became more important. There was a related rise in the quantity of goods in circulation, and particularly in the numbers of utilitarian items. Under such conditions

control of the means of exchange became as viable a source of power as control of the means of production.

The consumption of goods in the economy of the Later Bronze Age was marked by the dominance of conspicuous consumption. Such consumption, seen in such activities as ostentatious feasting and the destruction of wealth in religious rituals (including burial), was a public display of prestige and power. Such displays consumed high ranking goods and, in doing so used up much of the gain from processes of production and exchange. Such displays declined as commercialisation increased and reinvestment in further production was used to increase the output of utilitarian items. Conspicuous consumption did not disappear completely; rich burials and feasting maintained the tradition throughout the Iron Age (Gosden 1989:382), but as a proportion of the total amount produced the quantities of goods involved declined significantly. Simultaneously the levels of investment in production rose and this investment, from the Middle Iron Age onwards, was used to support the production of utilitarian items, ultimately in centralised workshops.

Gosden's principal concern in this case study is to demonstrate the change from a clan-based to class-based society during the Iron Age in southern England. It is inappropriate here to evaluate the success or otherwise of this attempt as there are a number of ways in which the central European situation differs from that in England. Even apart from the differences in the nature and quality of the data between the two areas it does not seem by any means clear that an assumption can be made regarding the nature of the Iron Age economy. The first requirement of an evaluation of any given society and its relationship to Gregory's logical-historical series of economic forms is an empirical investigation of the organisation of production and exchange in the case under consideration. In the following sections I shall set out a series of methodological principles, designed to assist in the description of the economic system and to be useful in investigating its nature. In subsequent chapters I shall apply these to the case of the later European Iron Age.

3.5 Theory in practice.

The first requirement of such a methodology is some form of description of the basic working of the social formation and to indicate, in a general way, the inter-relationship of its parts. Gregory (1982:103) presents a standard neo-classical model, which is reproduced as Figure 3.1.

He criticises such models as being inadequate and 'a complete distortion of reality' (1982:107) as they omit the consumptive production and productive consumption links which should tie such a model into a whole. Without these links

> 'production is grasped one sidedly as a creation process and consumption is grasped one sidedly as a destruction process' (Gregory 1982:104).

In addition the model has no explicit social component and presents a view of 'the economy' as an autonomous sphere of action. This does not, in the light of what has been discussed in the previous sections, appear to be a tenable view of the relationships between the various parts of a social formation.

In place of this model, I would propose an alternative which includes the aspects omitted and is also more suited to the interpretation of archaeological data. This is presented in Figure 3.2.

In the following sections I shall describe the constituent parts of this model and the ways in which they can be approached through the interpretation of archaeological data.

3.5.1 Modes of Production.

The term 'mode of production' was briefly referred to in the discussion of Marxism above. The concept was, I believe, first used by Karl Marx, but has been reviewed and redefined on numerous occasions, most importantly for the purposes of this case study by Peacock (1982). Before presenting my redefinition of the term, a brief description of some of the Marxist definitions is necessary, as it is in partial opposition to these that mine exists.

From Balibar's discussion of the concept (1970) it is clear that the mode of production is considered to be a principle that acts to articulate the whole of a social formation at any given time. Because of this property the identification and definition of a mode of production will lead to

> 'a new principle of periodization ... (containing a) ... complete transformation of the historian's problematic' (Balibar 1970:216).

In other words, in defining a mode of production we will have defined a scheme that will uniquely characterize the social formation in question. Balibar looks forward to a time when our understanding of the elements and connections within a mode of production will allow us to generate

> 'a comparative table of the forms of different modes of production which will all combine the same 'factors'' (1970:216).

The point that I wish to make is that for Balibar a given social formation will be characterized by a single mode of production. This view, which there seems very little doubt was the one held by Marx, is echoed by Hindess and Hirst in their consideration of pre-capitalist modes of production (1975). Though they explicitly reject the idea of a general theory of modes of production such as Balibar proposes, they do accept the idea of a general concept of mode of production. This they define as follows:

> 'A mode of production is an articulated combination of relations and forces of production structured by the dominance of the relations of production. The relations of production define a specific mode of appropriation of surplus labour and the specific form of social distribution of the means of production corresponding to that mode of appropriation of surplus labour' (Hindess and Hirst 1975:10).

Given the preoccupations of Hindess and Hirst, this would seem to be an adequate definition, but as Gosden has noted (1986) attempts such as that of Hindess and Hirst to develop large scale models of social formations have not been particularly useful outside the rather introverted world of Marxist scholarship.

I would therefore propose a redefinition of the term 'mode of production' that retains the essential articulation between forces and relations of production, but which is, in effect, operating at a methodological and 'middle range' level, rather than as high level social theory (Hodder 1986:103).

3.5.2 A redefinition of the mode of production.

Several authors, notably Balfet (1965), Rice (1981), Peacock (1982) and Van der Leeuw (1976, 1984) have described the processes of pottery production in terms of different configurations of technological and social variables, configurations that have been termed by Peacock 'modes of production' and by van der Leeuw, 'stages'. The concept, as they have outlined it, is essentially a technological and behavioural one, even though the social aspects are clearly implied by some of the key components. If we follow the Marxist logic and see the mode of production as an aspect of the social formation (even if not as a definitive aspect) then the social dimensions of the technologically descriptive schemes immediately take on a new importance, allowing us access to aspects of the social organisation of production through the archaeological data. It is this aspect of the mode of production that I intend to develop in the course of this section - the mode of production as a description of a set of relationships extending from the social into the economic sphere, rather than as a simple description of methods (ie

techniques) of production. This is of course of particular importance in the context of non-capitalist societies, in which, as I have described in the first part of this chapter, the relationship of the social to the economic is fundamentally different to that found in a a capitalist society.

Balibar (1970:215) gives a table of elements found in any mode of production:

1) Labourer

2) Means of production .

i) Object of labour

ii) Means of labour

3) Non-labourer

a) Property connection

b) Real or material appropriation connection

Elements 1 - 3 are combined in different ways according to the historical circumstances and as a result he suggests that we can

> 'reconstitute the various modes of production, i.e., we can set out the 'presuppositions' for the theoretical knowledge of them' (Balibar 1970:216).

In the scheme that I am developing here I would term these elements 'Components' and define them as the invariant parts of any production process. The components are:

Labour

Raw material

Technology

Output

Balibar's 'Labourer' and 'Non-labourer' are subsumed in the category 'Labour' and his 'Means of production' is split into the categories 'Raw material', 'Technology' and 'Output'. The variables are the organisational characteristics which define the specific mode of production. These are summarised in Table 3.1. Components are present in all modes of production - they are the basic elements without which production could not occur. It is the variables which define the individual modes, leading to a definition of the mode of production as a specific configuration of variables constituting a production process.

My major divergence from Balibar, and from certain other strands of Marxist scholarship, is that I do not see society as dominated or defined by a single mode of production (cf. Dupré and Rey 1978). A

more useful way of using the concept is to see any given social formation as composed of a coincidence of modes of production, varying according to particular historical conditions and circumstances. It may be that in certain situations one particular mode will achieve such pre-eminence that it is possible to speak of a social formation as defined by that mode, but this is far from saying that the principle is, in general, a defining one. We might expect that the number of modes of production will be larger during periods of transition, or in societies that are particularly heterogeneous or complex, but in the absence of suitable case studies such predictions remain speculative. The social component of each mode of production remains integral and an additional complexity will be added in the shape of the articulation between the different modes of production.

In practical terms the examination of these articulations demands the detailed examination of the complete ceramic assemblage from a series of sites within a region. Clearly such a project is beyond the scope of this case study and I have published elsewhere a preliminary outline of a scheme for the analysis of a ceramic assemblage in these terms (Cumberpatch 1989). Such an analysis would set the production of slip decorated pottery into its context. This case study is, as I outlined in the introduction, concerned with the organisation of one particular mode of production, and, more particularly of one mode of exchange and its wider social context.

Table 3.2 sets out five modes of production, based on those defined by Peacock (1982:6-11) and van der Leeuw (1976:402-403), which seem appropriate, in general terms, to the situation in the Late Iron Age. If this scheme is considered evolutionary, involving a progression from household production to production in a manufactory, as Rice has formulated it (1981:222-3), then it is an implicitly neo-classical one. If, in contrast, it is regarded as a logical - historical categorisation, similar in design and intent to that set out by Gregory (1982:36), then it becomes appropriate to the workings of a non-capitalist economy. There are however some particular features of gift economies that require consideration.

3.5.3 Production in a Gift economy.

Given the situation described in the section 3.3.5, it is clear that the organisation of production may differ significantly in a society organised on clan-based lines, with a gift orientated economic system, from the forms of organisation present in a class-based society. Exchange, which will differ even more markedly, will be considered below.

The level of technical expertise involved in the production of goods is potentially equal to anything achieved in a capitalist system. There is no question of 'primitive' craftsmanship being inferior to that of a society with equivalent means of production operating an economy with a principle of value. Differences will appear at the level of control and output. The possibility of production in a capitalist society will be primarily controlled by the availability of venture capital, which will be subject to the perception of potential markets by the entrepreneur. Social constraints, though they may exist to some extent, will not dominate. This situation will be reversed in a gift economy. Social constraints on production will affect all ranks of goods. Control will be exercised by tribal elders, big-men or chiefs (the precise status depending on local factors). Such control may be institutionalised in a variety of ways, the following example being but one.

> 'Iron, whether it is produced by the society itself or imported is often an elite good; but iron is used to manufacture production goods (tools); among the Guro of the Ivory coast - iron importers - iron tools are the direct property of the seniors whereas wooden tools circulate very freely in the lineage and even from one lineage to another. The political control which the seniors exercise through the reciprocal exchange on the reproduction of the conditions of production is thus doubled at the level of each lineage by direct control of the means of production' (Dupré and Rey 1978:194).

Dupré and Rey go on to cite the example of the Banzabi, where again control of the means of production allows control of production itself. Amongst the Tiv of Nigeria control over women by the lineage elders enables them to control the valuable goods in the second exchange rank (metal, cloth, guns, slaves and cattle). Only by obtaining these goods through war and trade could young men obtain the support of the elders that was needed for a marriage alliance (Douglas and Isherwood 1978:138).

Methods of control vary and may involve control of production or reproduction, as in the examples above or they may be connected with arcane knowledge. The principle remains the same; sectional control enacted through social institutions. In practical terms this will tend to limit output and either constrain or retard the adoption of output maximising technology.

In terms of the mode of production model outlined above, production in a gift economy will be composed of the same components and variables as a non-gift economy. Differences will emerge in the ways that these are combined as a result of the social relationships involved.

3.5.4 Methodology: Approaching the mode of production archaeologically.

The methodology to be employed in defining a mode of pottery production has to be based on a detailed examination of the vessels involved from the point of view of production technology. The aim is to reconstruct as fully as possible the components and, where possible, the variables that were involved in the manufacture of the vessels, from the acquisition of the raw material to the completion of the final stage of production. A similar methodology has been developed and applied widely in the field of stone tool studies (Torrence 1986) but has had, as yet, relatively little impact on European ceramic studies, beyond simple descriptive statements. In spite of this the methodology does exist for pottery and has been applied, though not generally in Europe, (Franken 1971, 1974, 1979, Franken and Kalsbeek 1969, Rye 1981, van der Leeuw and Pritchard 1984, van As 1984, Stienstra 1985, van As and Jacobs 1987, Glock 1987).

In their basic form these techniques of analysis lead to descriptions of behaviour, such that it can be (and, in a number of the cases cited above, has been) replicated under modern conditions. A further step, involving contextual analysis, is required if we are to understand production as a form of social action (that is as behaviour situated in a specific historical situation). Analytically this must follow a reconstruction of behaviour, and depends upon an understanding of production in the wider context of the society under consideration. To attempt to arrive at such an understanding it is necessary to see the production of individual vessels in a wider context, such as that provided by the mode of production model.

Archaeologically differences between modes of production will be represented by the use of specific methods of production, in the characteristics of the assemblage forming the output, in the modes of circulation (see below) and in the types of deposition involved. It may well be that in many situations the particular configurations detailed in Table 3.2 are inappropriate; but these are, after all, only five hypothetical points on a multi dimensional continuum. Other configurations exist but must be identified empirically. Such empirical definition, to be fully effective, requires the analysis of entire pottery assemblages from individual sites and, ideally, from well defined regions. As I have mentioned above,

such a task was impossible in this case, both because of the time and quantities of material involved and because the original problem to be tackled was conceived of as one primarily involving circulation. In chapter 4 a description of the methods employed to produce the slip decorated pottery will be followed by a reconstruction of certain aspects of the modes of pottery production and by notes on those of other goods.

3.5.5 The mode of exchange (or circulation)

Unlike Peacock and van der Leeuw, I have separated the circulation and exchange of goods from the mode of production. I have done this for several reasons.

Firstly it does not seem to me that a single mode of exchange should have any necessary connection with a single mode of production. Some relationships may appear to be logically connected (household production and local distribution for example) but local historical circumstances might easily distort the 1:1 relationship envisaged by Peacock and van der Leeuw. Extreme examples might include societies interacting with a major empire, where the products of that empire are distributed through totally different exchange systems to those operating within the empire itself. Conversely the products of a non-capitalist society, having entered a commercialised system, will be marketed as any item produced by that system would be.

Secondly the economic, and associated social relationships existing within a mode of production may be different to those existing within a mode of exchange. Participation within different sectors of the social whole will involve different sets of relationships between individuals, relationships that will be expressed in the organisation and structure of formations such as the mode of exchange. In other words individuals may participate in several different modes of production and modes of exchange, each one involving them in different sets of social relationships. This is one area where the active (or activated) use of material culture will be of significance in representing, defining and undermining social roles and attitudes, an aspect that I shall deal with in more detail below.

Thirdly, from the point of view of description and analysis it is clear that the more we can break a social formation down into parts, the greater will be the chance of recognising differences between it and others that may be superficially similar. Such superficial similarities can mask fundamental differences.

For these reasons the following scheme is presented describing the characteristics of different modes of exchange.

As with modes of production the empirical formations are alternatives on a continuum. Institutional or relational changes will produce different formations, so that when examples are given (Table 3.4 for example) these are arbitrary, intended as much for demolition and replacement by empirically justified categories, as for their utility in describing real situations.

The components of a mode of exchange are:

Market

Transport

Goods

Transactors

The term 'market' needs some definition as it is a word carrying many meanings. I use it here in the sense of 'context of exchange', which is, in many ways, a preferable term. A precise definition cannot be given as it will vary according to the specific historical circumstances. What can be said is that the market concept should not be confused with actual historical examples. It can refer to a variety of situations and institutions, from, for example, the exchange of food between related individuals in a non-capitalist economy, through the operation of the 'market economy' in contemporary Britain to the complicated system of economic and social relationships that structured the 'Black Market' in Poland during the period of Socialist rule. There is no required link with the 'Market economy', the 'Market principle', the institution of markets or even the designation of physical market places. This is not to advocate terminological anarchy, but rather to restate the situation- specific nature of economic organisation (Gregory 1982:100). What should be stressed is that the term has a social as well as an economic significance.

As with production the variables define the nature of the historical situation. These variables, together with the components are set out in Table 3.3. The mode of exchange can be defined as 'the specific configuration of variables constituting an exchange process', where exchange is defined as the set of relationships involved in the transference of goods from one party (producer, middleman, consumer) to another. The producer may be the actual labourer or the individual who controls the labour of others by whatever means. As with the case of production, no difficulty is seen in conceiving of a heterogeneous society involving a number of modes of exchange. Different needs will be met by the establishment of different exchange relationships, though this is not to imply that the way that they are met will be to the

advantage of all concerned. Exploitative exchange relationships will be as much founded on need, or perceived need, as equitable ones.

Table 3.4 summarises the characteristics of 4 modes of exchange that may exist under a capitalist or emergent capitalist system. These find counterparts in the spatial models of exchange devised by Carol Smith (1976:316-317).

3.5.6 Circulation, exchange and discourse.

In a recent critique of Gregory's analysis of economic systems, John Barrett has suggested that the view of social reproduction as involving the production, consumption, distribution and exchange of things and people is incomplete as it neglects the reproduction of the knowledge of social practices which constitute the social formation (Barrett 1989). It might be argued that this should not be considered as part of the sphere of interest of an economic analysis, but both Barrett and Gregory have placed exchange as central to the cycle of social reproduction, and Gregory has discussed the importance of symbolism in the preparation and consumption of food

> 'Consumption in a gift economy ... is not simply the act of eating food. It is primarily concerned with the regulation of relations between people in the process of social and biological reproduction. These regulations often assume the form of highly formalised rules which are designed to ensure the self-replacement of clans' (1982:78-9).

I shall discuss consumption in greater detail below, but here I shall focus on the implications for the understanding of exchange. Barrett's view of exchange is expressed through his formulation of the field of discourse, defined as

> 'an area in time-space occupied by virtue of the practice of a particular discourse' (1988b:11)

where discourse is

> 'a means of communication ... (which) ... draws upon and reproduces particular structures of knowledge, thus ... reproducing relations of dominance between individuals and collectivities' (1988b:9).

Communication should be taken here to include the messages encoded in material culture and in social practices, the whole range of non-verbal communication accessible to the individual living and participating within a social formation. The exchange of goods is thus intimately linked with the exchange and manipulation of information regarding the structure of the social formation.

As formulated by Barrett (1988b, 1989), the field of discourse is a heuristic device, enabling the archaeologist to treat the archaeological record

> 'not as a *record* of past events but as evidence *for* particular social practices' (1988b:6 authors emphasis, cf. Parker-Pearson 1982:100).

The exchange of goods constitutes such a discourse by virtue of its role, not only in contributing to the biological reproduction of a particular social group, but also by its role in reproducing the structures and form of that group. The exchange of goods acts not only to distribute socially and biologically necessary items throughout a group, but also to act as a forum in which a number of fundamental social relationships were enacted, understood and modified through individual action and interaction. In these terms the mode of exchange or circulation, as defined in the previous section, comes into its own as a description not only of the mechanics of a form of organisation but also as a field of discourse; the location (in time and space) of a number of social practices fundamental to the existence and reproduction of the social group. In these terms the circulation of the goods described in chapter 2 constitutes part of a mode of exchange or circulation, other parts involving archaeologically invisible goods.

To see exchange (at both the intra- and inter-community levels) in these terms, rather than simply as an aspect of material provisioning, immediately modifies some of the privileged status ascribed to exotic and rare goods. This is not to deny their potential importance within the symbolic sphere, but rather to place them within a context in which they could actually function as symbols of the extraordinary, in contrast to the more familiar, locally produced, goods. This is a context implied, but neither stated nor explored, in most of the studies which have taken exotic goods as their focus. Throughout the remainder of this chapter a central theme will be that the circulation of goods is symbolically as well as materially significant. This may be clearest when considering what appear to the modern view to be non-utilitarian artefacts, but applies equally to utilitarian goods which will carry their own burdens of significance to both donors and recipients or vendors and purchasers.

3.5.7 Identifying Exchange in a Gift Economy.

In section 3.3.3 exchange in a gift economy was defined as the exchange of inalienable items between reciprocally dependent transactors. The types of exchange described in Table 3.4, though they may have equivalents on some levels (spatially for instance) will clearly not be found in an economy so intimately linked to social relationships. Given the great variety of forms of organisation possible in a

clan - based society (Gregory 1982:38) it is difficult to set up a scheme corresponding to Table 3.4. Certain principles can be adduced however which should serve to guide interpretation. The factors affecting the nature of exchange were outlined above. Briefly restated they are:

Social status of the transactors

Social status and social role of the objects transacted

Spatial and temporal aspect of the exchange

Motivation of the transactors

Relative ranks of the objects

If it is impractical in general terms to set up a series of modes of exchange, as has been done for class based societies, it is by no means impossible to derive expectations concerning the ranking of goods from the factors outlined above as Gosden has done for the case of southern England (1989: Table 1, reproduced as Table 3.5). Low ranked gifts (subsistence products) will be locally produced and consumed, except where ecological factors lead to exchange. Basic craft products (ranks 2 and 3) are likely to circulate at an intra-group level with some exchange at an inter-group level. The upper 3 ranks will be subject to greater control with production and circulation controlled by the elite group in society. These patterns will be reflected in the spatial distribution of the items involved at an inter-site and intra-site level. The items involved and the spatial patterning resulting will vary according to historical circumstances, but the principles will remain the same.

The principal problem with this scheme, as applied to artefacts from archaeological contexts, is that ranking is based largely on considerations of labour input, and it is consequently impossible, for all practical purposes, to distinguish relative rank from relative value, which is normally inferred on the same basis. Definition of the principles underlying exchange must therefore be supported with reference to other sources of information.

3.5.8 Methodology: Identifying circulation and exchange archaeologically

In discussing the methodology employed in studying production, a distinction was made between behaviour and action. The same distinction can be made in the case of circulation. Defining the origin and subsequent movement of objects, both artefactual and ecofactual, has been one of the principal achievements of archaeometry in the last 30 years. The development and application of increasingly

refined techniques for characterising and sourcing objects continues to be the subject of a considerable (and increasing) investment of time and resources. The numbers of techniques available, and the variety of subjects reported upon at archaeometric symposia (e.g. Slater and Tate 1988, Maniatis 1989, Pernicka 1991), point to the immense potential for the reconstruction of the behavioural aspects of the circulation of goods. To repay this investment in technical sophistication, an equally sophisticated understanding of the social context of such behaviour is required (Thomas 1990a:6, Edmonds 1990). Following Hodder (1986) I would suggest that such an understanding can only come from detailed study of the particular situation involved and an adequate theorisation of the nature and context of the actions involved. In the situation under consideration here I have tried to provide the former in chapter 2 and, in the final chapter, will integrate this information with that derived from my analyses of the slip decorated pottery.

3.5.9 Consumption and use

In section 3.3.3 I described as a defining characteristic of Political Economy, a circular model linking production to consumption via exchange. The categories of productive consumption and consumptive production embody the connections between the use of material goods and labour power and the production of further goods and the reproduction of people. An extension of this is the employment of goods in the production of meaning (via symbolism and metaphor) which plays a crucial part in the reproduction of the social formation, which, in Barrett's terms, can be defined as

> 'a network of relations between people which exist through the medium of material symbols' (1989:308).

Gregory has drawn a distinction between class-based societies, where the consumption of goods is relatively unstructured and clan-based societies where it is highly structured

> The consumption sphere is very much a subordinate sphere under capitalism .....(and)....presents a striking contrast to a gift economy where the methods of consumption are highly organised' (Gregory 1982:75-76).

The extent to which this simple dichotomy can be sustained is debatable. The characterisation of consumption as being a subordinate sphere under capitalism is derived from Marx's analysis of the 19th century European (and specifically British) situation, in which the goods produced in the industrial cities were consumed in particular ways at home and in the expanding empires. Though an analysis of the world economy in terms of such concepts is still possible, the differences between patterns of

consumption in the 19th century and the late 20th century are profound, with many contemporary productive processes dependent upon the existence of modes of consumption which scarcely existed in the 19th century (Tomlinson 1990:3). Such a situation suggests that the organisation of consumption should be evaluated empirically, together with the organisation of production and circulation.

The examples cited by Gregory are concerned with the consumption of food and its actual and symbolic role in human and social reproduction (1982:77-79), but at a more general level he stresses the symbolic aspects of the goods exchanged. He notes in particular the personification of goods and the links made between the exchange and consumption of goods and sexual reproduction (1982:90-91). A number of these points actually pre-empt Barrett's critique (1989:307-308), by focusing on the symbolic aspects of goods exchanged as gifts

> 'Thing-gifts can only enter the sphere of consumption and be exchanged as symbols if they have been produced. But they do not acquire the status of symbols only in the sphere of consumption. They are produced as symbols and this gives the method of gift production a particular social form. ... The methods of production of thing-gifts are ... governed by the ideology of consumption ... Gift production must be understood as the process of production of symbols for use in the sphere of consumption. It has a two-fold aspect: on the one hand it is the production of food for intra-clan consumption, on the other hand it is the production of things for inter-clan gift exchange' (1982:91)

Archaeological approaches to the consumption and use of goods have tended to draw a distinction between prestige goods, which are seen as symbolically significant, and utilitarian goods which have been interpreted in largely functional and behavioural terms. Similar attitudes have structured approaches to ceremonial monuments and domestic architecture. This distinction between the symbolic and the utilitarian is, however, an essentially ethnocentric one, and it is clear from a number of recent studies (including that of Gregory) that the consumption of goods can only be satisfactorily approached through a consideration of the specific ideological context. Examples of the importance of such considerations include the association of particular goods with certain age, gender or other groups, backed by taboos (Braithwaite 1982, Miller 1982, Therkorn 1987, Shanks and Tilley 1987:105-117, Sterner 1989:458-9).

3.5.10 Methodology: Understanding consumption.

Although a number of techniques exist which can be employed to determine the use of various types of goods (involving the analysis of organic and other residues), an understanding of consumption in a broader sense can only come from a detailed contextual study of the material culture; where context

refers both to the archaeological context and to the social context within which consumption took place. Analysis of archaeological data in these terms requires the impeccable excavation of well preserved sites, conditions which are unfortunately rare, particularly with regard to domestic sites.

3.6 Conclusion.

In this chapter I have tried to set out an approach to the study of the Late La Téne period which provides an alternative to those which I have described and criticised in chapters 1 and 2. It has not been my intention to advocate an uncritical acceptance of analogies based on the situation in Papua New Guinea as described by Gregory, but rather to suggest that the principals of Political Economy, with their emphasis on the historical specificity of social formations offer a potentially useful way of describing the organisation of production, circulation and consumption within a non-capitalist society. In the following chapters I shall employ some of the methods and perspectives which I have outlined in this chapter in the interpretation of the case of the slip decorated pottery.

Chapter 4.

The technology and organisation of slip decorated pottery production.

4.1 Data collection.

Before embarking on a discussion of the details of the production and circulation of slip decorated pottery it is appropriate to describe the assemblages available for analysis within the study area. Inevitably there are wide variations in both the quality of these assemblages and in their accessibility.

Slip decorated pottery forms only a small percentage of the total ceramic assemblage on Central European sites, a percentage that can vary from single sherds to hundreds in the case of sites such as Stradonice and Zemplín. The quantities were nowhere so large as to compel the employment of a formal sampling strategy and an attempt was made to examine every sherd. For a variety of reasons this proved to be impossible and details will be found in appendix 1 of the material that was examined and of that which was inaccessible. The reasons for the gaps are various. In a number of cases the conditions of storage made it impossible to locate all or part of the pottery assemblage from a given site, while in others the material had been physically mislaid, a particular problem with material from small sites excavated before the Second World War. In some cases, notably Závist, Hrazany, Százhalombatta and Mšecké Žehrovice, the pottery was in the process of being drawn and described for publication and so was unavailable for study.

The assemblages from Vyšný Kubín, Komárno, and Nitriansky Hrádok were all very small and, in the case of the latter two sites, incomplete. That from Nitriansky Hrádok was from excavations undertaken in the 1950's which focused on the Bronze Age settlement and the ramparts of the defended site, while all the material from Komárno came from building work within the 17th century fortress. Though the pottery from these sites was used in the statistical analyses, it should be noted that the size and nature of the samples may be misleading. The sample from Liptovská Mara also caused problems as, although a larger number of sherds was examined, the sample did not constitute the whole of the slip decorated pottery assemblage. The excavations at Bratislava and Devín have both produced large amounts of slip decorated pottery but in neither case was it possible to examine the material in any detail. The pottery from Devín was unavailable due to its imminent publication. The material from Bratislava was held by the Slovak National Museum and under the rules concerning the artefacts in the collections could not be sampled on any significant scale.

In Poland the site of Tyniec - Klastorisko now lies beneath a medieval monastery and, though material from building work and small scale excavation is on display, the collection is, for practical purposes, a private one and could not be examined in detail. The three samples which were taken came from the excavations carried out in the mid 1950's by Lenczyk (1956), and were stored at the Polish Academy of Science research centre at Igołomnia.

For reasons connected with the logistics of storage and the constraints of my own travel plans, a number of assemblages (Pleszów, Liptovská Mara and Zemplín) were examined at separate times and in different places. This has resulted in the apparently illogical labelling of various samples, but has not affected the results of the analyses described in chapter 5.

4.2 Methods of production

In chapter 3 I set out some principals for describing the organisation of pottery production in terms of different modes of production. In this section I shall show how these can be used with regard to the slip decorated pottery and the extent to which the mode of production can be reconstructed from archaeological data. As a necessary preliminary to this I shall present a basic description of the techniques used to produce the vessels and, in doing so, will correct certain misconceptions which have arisen over the years regarding the methods of production.

4.2.1 The fabric of the vessels.

Macroscopically the fabric of the painted pottery appears as a fine textured paste containing visible inclusions of quartz, muscovite and biotite. The fabric colour is generally a light brown - red (C.B.A. n.d.) sometimes with a grey core. The colours are a result of the firing techniques required to bring out the colours of the paint and are discussed in more detail below.

The minerals visible microscopically were generally those visible macroscopically, though with the addition of low frequencies of plagioclase, rock fragments (principally sedimentary and metamorphic), and grog. Proportions of unidentified minerals rarely rose above 1.5%. This failure to identify minerals diagnostic of possible source areas had important implications for the project as a whole and these are discussed in greater detail in chapter 5.

The size range of the particles was relatively low. The largest grains were normally of quartz or grog and though these occasionally measured over 0.0987mm along the longest axis, the normal range for

particles classified as 'coarse quartz' was between 0.0658mm and 0.0987mm. The inclusions showed a generally even distribution throughout the clay body (Cumberpatch and Pawlikowski 1988 and plates 5.12 - 5.17).

These characteristics conform closely to those expected from a clay body carefully prepared for throwing by the use of refining processes such as levigation (Rye 1981:chapter 4).

4.2.2 Forming methods.

The variations in vessel shape that occur across the study area are discussed in detail in chapter 5. Although these variations are significant in the interpretation of the pottery from typological point of view, they do not represent significant differences in the methods used in production. The vessels can be divided into two broad groups, open forms (bowls) and closed forms (jars). Open forms vary from the types found typically in Bohemia with an externally beaded lip (Figure 4.1, plate 5.11) to those found further east which tend to have inturned rims, frequently with internal thickening. The closed forms are predominantly tall wide bodied vessels with everted rims and pedestal type bases (Figure 4.2). Though these show considerable variations in rim form, size and profile, they, like the open forms, show uniformity in their method of production.

A number of features combine to demonstrate beyond all reasonable doubt that the vast majority of vessels of both types were formed by throwing on a wheel. The diamond shape of the body sherds, the acute angles shown by the broken rims and the convex and concave cross sections of the fractures are all typical of vessels produced under the stress of throwing (Rye 1981, Franken and Kalsbeek 1969:79-80). In the case of the closed forms the internal profiles of the vessels show the characteristic spiral finger marks associated with throwing. In the case of the open forms these marks have been removed by smoothing and, in some cases, burnishing, but here the fracture patterns and spiral markings on the bases are conclusive. In some cases this smoothing process was poorly executed, and the finger marks are still visible. Examples of this can be seen on two sherds from Stradonice (NM 104362 and NM 104361).

The fine texture of the clay, described above, provides further corroborative evidence that throwing was intended as the method of production (Franken and Kalsbeek 1969:92)

The bases of all types of vessel show traces of reworking. In some cases this has been extensive (Figure 4.3) with the addition of ring feet while in others it is minimal. None of the vessels examined showed any evidence of inserted bases such have been found at Manching (Maier 1970 Figure 49) or in

central France (Watson 1988, Guichard in prep., Andrews, Cumberpatch and Watson in preparation). This having been said however, it should be noted that the numbers of bases of closed forms in the assemblages examined was certainly lower than those from the sites of Aulnat, Gerzat or Manching.

The overall picture is one of vessels thrown on a rapidly rotating potter's wheel. No examples of wheels are known from Iron Age Europe, but it can be assumed that some form of kick wheel was involved.

It is important to establish this principle as certain authors have made statements concerning the methods of production which contradict it. Herbert Schultz has stated:

> Production techniques - type of clay, firing, painting - seem to have been standardized. The jars were first formed by hand, the turning on the wheel being a secondary process by which slender ascending forms of a simple elegance were achieved. (1983:263).

There is no evidence to support Schultz's assertion the vessels were initially formed by hand and subsequently refined on the wheel. Though hand modelled pots can be modified by turning on a wheel after the shape has been established, the traces on the sherds studied, which I have described above, combine to support the suggestion that the vessels were thrown on the wheel in the conventional way, that is from a ball of soft clay centred on the wheel head and shaped through the interplay of centrifugal force and manual pressure.

A suggestion with rather more serious implications has been made by Jansová (1963) who has linked certain sherds of pottery from settlements with complete vessels found in graves. The occurrence of an early type of painted pottery has been commented on in the introduction and it is this material that Jansová has dealt with. Four complete vessels, from cemeteries at Letky, Strakonice and Uhřetice (Jansová 1963: Figures. 1 and 2, Waldhauser 1987: Figure 17:19) were compared with sherds from settlements at Kuřimany, Nová Ves (Figure 4.4) and Cerhýnky. On the basis of macroscopic comparison Jansová drew parallels between the complete vessels from the cemeteries and the sherds from the settlements. Her conclusions were that the vessels represent examples of types familiar from the Early La Tène cemeteries in the Champagne region of France, and that they were the result of an early wave of influence from the west, while the material from the settlements represents a similar but later wave. Subsequently Čižmár (1974) has published details of a number of early vessels from cemeteries in Moravia which resemble the complete Bohemian vessels in their general form (Čižmár 1974: Figure 1).

Examination of the Bohemian vessels suggested that the examples from the graves were hand made using a turntable and scraper to produce a series of thin walled pots while the sherds from the settlements were thrown on a wheel (Thwaites pers. comm.). I have had no opportunity to examine the Moravian vessels, but the published drawings (Čižmár 1974:469) show clear similarities with the Bohemian vessels. The differences in date (Čižmár places the Moravian vessels firmly in La Tène B), in vessel form, in method of manufacture and in depositional context, all suggest that the two groups of material, from the cemeteries and from the settlements, are linked only circumstantially, and should not be considered as having any necessary relationship to each other. This conclusion is in contrast to that recently drawn by Rigby, Middleton and Freestone, who have suggested that the production of red and black pottery in the Champagne region of France represents

> 'the beginnings of a new and innovative tradition which began with the introduction of the potter's wheel and evolved during La Tène 2 and 3 into what eventually became the Gallo-Roman pottery industry' (Rigby et al 1989:14).

The relationship between the vessels from Champagne and those from Central Europe remains obscure, beyond Jansová's vague suggestion of migratory influence. Further study of this group of early material is clearly needed, but it is not an integral part of the present work.

4.3 Decoration.

Before considering the questions raised by the paint, or slip, some minor decorative techniques can be dealt with. The first of these is the practice of incising lines through the coloured coating into the clay beneath. Within the study area this trait is restricted to Bohemia, though it has also been noted at Manching (Maier 1970: Figure 40,792). The incisions, normally a wavy line running around the circumference of the vessel, seem to have been made after the vessel was coated with slip and before firing, at the leather hard stage. The execution of the lines suggests that a turntable was used to rotate the vessel while a tool was held against the surface. Examples are illustrated in Figure 5.21 and plates 5.3 and 5.5.

A small number of vessels from Stradonice (Figure.4.5) include functionally superfluous ridges and grooves which were formed during the throwing of the vessel (Figure 4.5). Profiling on such vessels is not known elsewhere.

In 1936 three sherds of slip decorated pottery bearing the imprint of a carved gemstone were found in Budapest. The impression depicted a seated figure of Victory (Bónis 1969:173-4, Figure 28).. The discovery that a potter should have been in possession of a carved gemstone (probably a seal-ring) has caused a number of commentators to speculate upon the possible connexion between the Roman and the La Tène pottery industries (Bónis 1969:173). The simplest explanation for the presence of an object such as a seal ring would seem to be exchange, either directly with an individual from the area of the Roman empire or with some intermediary. As outlined in chapter 2, Roman goods are rarer in central Europe than they are further west, but they are by no means absent, and an object such as a seal-ring, being easily portable, yet at the same time exotic, could easily be considered amongst them. The fact that a potter should possess such an item may indicate something about the status enjoyed by potters in Late La Tène society (Collis 1984b:98). It was not possible to obtain a sample of the stamped wares for analysis.

4.3.1 Slip and Paint.

The practice of referring to the coloured coating as 'paint' is widespread and well established. In all the languages encountered in this study the term 'paint' is used to describe the material as well as the action involved in its application. The use of this term seems to oversimplify a situation that is in fact more complex than it might at first appear.

At the outset a distinction must be drawn between the two types of coating applied to the vessels. The first is the commoner of the two, the red or reddish brown and white coatings applied either over the whole surface of the vessel or in bands around the circumference. The second is the grey, black or purple substance used for the geometrical designs that overlie the red and white bands. In appearance and character the two are very different. The first, although less than a millimetre thick, nevertheless has a thickness that is visible to the naked eye and is easily visible with either an optical or a scanning electron microscope (Cumberpatch and Pawlikowski 1988: plates 1-4, reproduced as plates 5.12 - 5.17, Andrews 1991: Figure 1). The second has no visible thickness and is frequently so worn as to be almost invisible (as can be seen in plates 5.4, 5.5, 5.7, and 5.8). It is clear, even to the casual observer, that the two are different substances.

The grey pigment used for the geometric decorations has, so far, defied analysis. It has proved impossible to obtain an uncontaminated sample for analysis because of its close bond to the underlying

slip and its extreme thinness (Andrews pers. comm.). Examination of the patterns and motifs suggest that it was applied with brushes of varying thicknesses (Shepard 1956:204). The uneveness of the lines and the small errors and inconsistencies in the application point to freehand painting rather than stencilling (Figure 4.6). I have found no parallel in Central Europe to the sherd from the site of Gerzat - Patural in the Auvergne, which has grey linear decoration applied with a six pointed brush (Guichard:in preparation).

The appearance and physical characteristics of this substance suggest that it is not a clay based medium, and in this important respect it differs from the red and white coating. The most obvious explanation is that it is a carbon based pigment made from organic matter mixed with water and carbonised by heating after application. If this is the case it would have been applied after the firing of the vessels, as carbon burns away at temperatures well below those required to fire the pottery (Shepard 1956:203). Carbon based paints applied in this manner may be surprisingly resistant to both physical and chemical attack as the carbon is 'adsorbed and protected by the clay' (Shepard 1956:388, cf Rice 1987:148-9). A fuller understanding of the grey pigment will only be achieved when it is possible to apply more sophisticated methods of analysis to it (such as X ray photoelectron spectroscopy), techniques which were unavailable in the context of this research.

An exception to application of the grey pigment with a brush can be seen on sherds from Stradonice and Závist. This is the method used to create the pattern of white, sub-circular discs against a grey background (Figure 4.7 and plates 5.3 and 5.4). This differs from the normal decoration in that the white pigment shows through the grey. Examination of the shape of the circles and the relationship of the two coatings suggested that some method of application was used other than the brush. The most plausible explanation seems to be that a 'wax-resist' method was employed (Shepard 1956:208). The areas to be left white would have been covered with a water repellant substance (such as beeswax) and the grey pigment applied either by dipping the entire pot into the liquid or by painting with a broad brush. Once the wax had been removed, either after the pigment was dry or during the firing, the pattern would be established. The same technique is known from Manching (Maier 1970: Figure 85) and from Central France (Périchon and Péronnet 1989:99).

Whereas the composition of the grey pigment has so far eluded precise determination, the red and white coatings are, by virtue of their greater thickness, more susceptible to examination and analysis.

As mentioned above the term 'paint' is used universally to refer to this coating, but this seems to be something of a misnomer. The word paint, although commonly used to refer to a wide variety of coloured coatings, should in fact be used to refer to the action of application (Rice 1987:148). To apply a liquid with a brush is to paint, irrespective of whether the substance applied is a coloured pigment on the ceiling of the Sistine chapel, creosote on a garden fence or slip on the surface of a pottery vessel. The substance thus applied should, in the interests of accuracy, be referred to by a more precise term. This is particularly the case in this situation when two rather different materials are involved.

Examination of either the red or the white coating with the naked eye suggested that the substance should be more properly termed 'slip'. In potter's terminology slip is defined as

> 'a fluid suspension of clay or clay-body in water; a non - vitreous coating applied to a pottery vessel' (Rye 1981:146).

Given this definition certain characteristics are expected including the presence of mineral grains when examined under the microscope, and a chemical and physical composition conforming to that expected of some variety of clay.

Slip can be applied in a variety of ways, and it is the method of application that has given rise to the name 'painted pottery'. Wear and abrasion, during the life of the vessel and following deposition, has enhanced originally invisible markings on the slip coated surfaces. Typically a worn sherd shows a linear pattern of more or less resistant lines of slip. These are caused by the overlapping of the brush strokes that occurred during the painting. Examples are numerous but NM 104423, a sherd from Stradonice is typical, showing resistant lines 4mm wide. Such patterning can also be seen in plates 5.3, 5.5 and 5.11.

The distinctions drawn in this section, between pigment, paint and slip, lie behind the decision taken to refer to the pottery as 'slip decorated pottery' rather than by the conventional term 'painted pottery'.

4.3.2 Origin and composition of the slip.

Until recently analysis of the materials and techniques used to produce pottery vessels were the exception rather than the rule in European prehistoric studies. Although this situation is now changing, there is as yet no body of analytical data comparable in size to the descriptive typological data available for prehistoric pottery. In the case under discussion here only three case studies are directly applicable (Wirska-Parachoniak 1980, Cumberpatch and Pawlikowski 1988, Andrews 1988, 1991) and of these only

two (Wirska-Parachoniak 1980 and Cumberpatch and Pawlikowski 1988) relate directly to the area concerned. The latter is concerned chiefly with the composition of the clay body, and touches only peripherally on the question of the slip, though the microphotographs included in the article clearly show the mineral grains in the slip (1988 plates 1 - 4, reproduced as plates 5.12 - 5.17).

Two studies have dealt specifically with the physical composition of the slip. Andrews (1988, 1991) has analysed 97 sherds of pottery from the site of Aulnat in central France and has sought to relate the technology of production to its social aspects. Wirska-Parachoniak has analysed ten sherds from six sites in Poland as part of a larger study of La Tène pottery production in Małopolska and Silesia.

Both authors agree that the material with which the pottery is coated is a slip. Wirska-Parachoniak states that it was composed of

> 'thoroughly purified, washed clays ... obtained from red and white kaolinite clays occurring near Baranów Suchedniowski in the Kielce region where they form deposits ... varying from 3 to 20m in thickness' (1980:158).

Andrews, though he does not define sources for the French material, is in general agreement with this conclusion, summarising his results thus

> 'The analyses indicate that the decorative coatings are elutriated or levigated clay based slips rather than organically based pigment paints or stains' (1991:235).

Both authors have identified iron, in the form of iron oxide, as the agent responsible for the colour of the red slip. Andrews states that

> 'The slip coatings contain little in the way of added pigments, rather the colours were developed and fixed during firing of the thin clay slurries, whereby haematite is formed by oxidation, resulting in a variation of reds. Calcium was added to suppress the formation of haematite in order to modify the colours produced in the firing process' (1991:235).

An alternative to the addition of calcium has been suggested by Wirska- Parachoniak, who has considers that the white slip itself was based on white kaolinitic clays which, in the absence of iron, fire to a bright white finish (Wirska-Parachoniak 1980:158).

4.4 Firing.

4.4.1 Firing Temperature.

There are three principal factors in the firing process that can be controlled by the potter. These are the rate of heating, the maximum temperature reached and the atmosphere surrounding the pots (Rye 1981:25).

The rate of heating is critical in that the chemical reactions involved in the transformation of clay require time to occur. Heating that is too rapid will lead to a variety of problems that will adversely affect the finished vessels. Given the state of the craft in the Late La Tène and the quality of the products it would seem that problems of this type were limited.

A number of studies have been made of the firing temperature of the slip decorated pottery and two different methods have been employed. The first of these is firing shrinkage or refiring. The details of this procedure have been set out by Tite (1969) and Nicholson (1989). Briefly the technique depends upon the fact that, when fired, clay undergoes a process of shrinkage as the particles of which it is composed fuse together. This process, known as sintering, ceases when the temperature in the kiln stops rising. If a sherd of pottery is reheated no significant change will occur in its size until it reaches the temperature at which sintering ceased. Once this temperature is reached shrinkage will resume. Refiring experiments involve the heating of sherds of known size and the measurement of their dimensions at regular intervals. Once plotted on a graph (size against temperature), the resumption in shrinkage can be seen and the original peak of temperature determined.

This method of determination was employed by Wirska-Parachoniak (1980 Table 5, Figure 48), and has more recently been used on a small number of sherds from Czechoslovakia by Dr. P. Nicholson and myself. Wirska-Parachoniak's analyses, on the same sherds as were used in her work on the slip (cited above) showed firing temperatures of between 820 and 880 degrees centigrade.

Three refiring experiments were carried out by Dr. P. Nicholson on my behalf at the Department of Ceramics, Glasses and Polymers, Sheffield University. The results are given in Table 4.1 and the graphs are reproduced as Figures 4.9.1 - 4.9.3.

The second method of determining the firing temperature depends upon the interpretation of mineralogical changes associated with the rise in temperature during firing. Nicholson (1989:122-3) has pointed out that such interpretations are somewhat less accurate than figures derived from thermal

shrinkage because of the potential variability in the behaviour of the minerals involved.. Changes are due not solely to temperature rise, but also to factors such as the kiln atmosphere, the crystalline phase of the minerals present in the clay and local retardation of the chemical reactions (Nicholson 1989:122). This having been said estimations, based on mineralogical changes observed by means of X-ray diffraction, infra-red spectrometry and mineralogy (Cumberpatch and Pawlikowski 1988), suggest a range of firing temperatures comparable to, if somewhat less precise than, those ascertained by means of thermal shrinkage. They are presented in Table 4.2.

Petr Holodňák has referred to the firing temperature of the slip decorated pottery from Northwest Bohemia as lying between 800 and 850 degrees centigrade (Holodnak 1987:27). He gives no indication of how this figure was arrived at, but as the remainder of the paper is concerned with a mineralogical examination of the pottery, it is fair to assume that it is based on observations of the mineralogy of the sherds in question.

Overall it seems clear that temperatures of between 700 and 1000 degrees centigrade were achieved during the firing of slip decorated pottery, the thermal expansion method suggesting somewhat higher temperatures than other methods. This has implications for the behaviour of the slip. In the previous section I established that the slip used to decorate the vessels was a refined clay coloured with inorganic pigments. Wirska-Parachoniak has pointed out that these slips had a higher fusing temperature than the less pure clays from which they were extracted. The red slip, coloured with iron oxides generally had a lower fusing temperature than the white slip (1980:158). The result of these differences is visible in the differential preservation of the coatings. The red slip tends to be harder, shinier and more resistant to wear, both during the life of the vessel and afterwards, during burial. The white slip, not having fused, tends to be softer and more susceptible to wear. This having been said it should be noted that there is no simple correlation of red slip with a hard, shiny surface and white with a soft, unfused surface. Though it is more common to find a resistant red slip and a softer white, there are many examples of the situation being reversed, or of both slips being soft or hard. This may reflect the inevitable variations in firing temperature between different kilns, different firings or even variations within a single kiln. It is equally possible, as Wirska-Parachoniak (1980:158) has suggested, that organic materials were added to the slip, to act as fluxes and lower the fusing temperature. Were this to have been the case however, we might expect a more regular occurrence of either fused slip or unfused slip, whereas the examination of the material suggests a far less structured occurrence than this.

The situation may be complicated by the nature of the burial environment and the reaction of the slip to physical and chemical weathering processes. Though pottery is generally very stable and is little affected by burial conditions, it is still susceptible to attack by natural agencies, to a degree that is, at least in part, determined by the manufacturing process (Swain 1988). As a general rule the higher the firing temperature (and consequently the greater the degree of sintering) the more resistant a sherd will be to damage. If, as seems likely, the firing temperature was barely high enough to initiate fusion, the slip would have been susceptible to a variety of post depositional changes.

4.4.2 Firing atmosphere.

The firing atmosphere is the mixture of gases within the firing chamber. Its composition has a significant bearing on the final appearance of the vessels being fired. If insufficient oxygen is available then a predominance of carbon monoxide within the kiln will produce a reducing atmosphere, depositing carbon and producing a grey or black ware. An excess of air will give an oxidizing atmosphere, removing carbon, resulting in a sandy or buff coloured ware. If the amount of air available equals the amount of fuel, a neutral atmosphere will result (Rye 1981:25). Both oxidized and reduced wares were produced during the Iron Age. While it is by no means certain that all Late La Tène pottery was produced in kilns, the nature of the slip decorated pottery is such that it requires a kiln within which the atmosphere can be precisely regulated. The updraught kiln that is the standard type in the study area (discussed in more detail in section 4.5) would seem to have been ideal for the production of slip decorated pottery. As Rye points out, updraught kiln structures allow

> 'good control over the firing atmosphere because the supply of both fuel and air to the firebox can be regulated' (1981:25)

and are particularly suitable for achieving an oxidizing atmosphere.

Cross sections of sherds of slip decorated pottery generally show a grey core of varying thickness, with buff or sandy coloured inner and outer edges. The edges of the zones are normally sharp. This patterning would tend to suggest firing initially in a reducing atmosphere, followed by the introduction of excess air into the kiln, either during the last stages of firing or during cooling. During this latter phase of the firing the formation of oxides was the decisive factor in the appearance of the colours of the slip (Andrews 1988, 1991:233). The precise compounds involved have been described in section 4.3.2.

4.5 Potter's workshops.

In addition to the information that can be derived from the pottery itself, a number of pottery production sites exist in the area under consideration. The majority of these are known because of the existence of kilns, and indeed few have produced other features that can be definitely linked with pottery production, a situation that is by no means limited to the Iron Age (Bosworth 1982). The location of these sites, and some of the implications for the organisation of production have already been discussed in chapter 2. Others will be discussed below.

None of the kilns can be unequivocally linked with the production of slip decorated pottery, though secondarily burnt sherds have been found in one of the kilns at Liptovská Mara (settlement 7, Pieta pers. comm.), and two white sherds were associated with the kiln at Milovice (Freising 1980).

There seems to have been little change in the type of kiln used during the Iron Age, and the examples found within the study area show few variations from a basic design. The kilns are predominantly circular or oval semi-sunken updraft types with a fire chamber divided into two parts by a projecting tongue that continues from the back wall along the length of flue, dividing it in half. Two examples, from Slovakia and Hungary are illustrated in Figure 4.10, and a suggested reconstruction in Figure 4.11. The reason for the division of the flue and fire chamber into two is obscure, as it would tend to make the maintenance of an even firing temperature more difficult by requiring, in effect, two separate fires to be maintained at roughly the same temperature throughout the firing process. It is however a regular feature of kiln construction throughout Central Europe (Peto 1979, Jerem 1984a, b, Čižmár 1987, Ozdáni and Hečková 1987, Zachar 1982b, Princ and Skružny 1976, Meduna 1980a).

Though none of the kilns deviate fundamentally from this design, there are some variations in their shape and arrangement. The majority are circular or oval, but in Bratislava a number of rectangular kilns have been discovered (Janšak 1953, 1955). It is not clear whether these represent a functional or chronological variation. In his discussion of the same question in the context of Roman pottery production (where rectangular kilns are sometimes considered to have been used to fire bricks), Peacock has found no clear division by function between the two types (1982:69).

From the point of view of the organisation of production, a more significant variation is represented by the varying numbers of kilns fed from a single stoke pit. The normal practice seems to have been to have had a single stoke pit for each kiln. Two sites however have produced multiple kilns fed by common stoke pits. At Čataj, near Bratislava, two kilns were fed from the same pit, and had

apparently been constructed at the same time (Ozdáni and Hečková 1987). They were dated to La Tène C1. At Strachotín in Moravia 3 of the 7 kilns shared a common pit (Čižmár 1987). The situation here is more complex than that found elsewhere, as it seems that the middle kiln predates the outer two, and that the occupation of the site, together with the use of the kilns, covers the period from the end of La Tène B to La Tène D.

It has been suggested (Meduna 1980a:109) that a severely damaged kiln found at Milovice in Moravia may be of a downdraft type. Reconsideration of the original notes made by the excavator, Hans Freising, (reprinted in 1980), and of the illustration published by Kuzmová (1980), shows this to be unlikely. The kiln appears to be of an updraft design, although it is unusual in having had two rectangular chambers fed by a central flue or stoke pit.

Few other traces of pottery workshops are known. Ludikovský (1964) has suggested that a structure at Velké Hosteradky was a drying shed, citing the evidence of sherds of unfired pottery, and that features in the beaten earth floor of a hut at Komořany represent the remains of the location of a kick wheel. Pieta has described a workshop at Liptovská Mara which contained burnt clay and unfired sherds of pottery (1982a:130), but none of these has added significantly to our knowledge of the potter's craft. In addition Meduna (1980a:110) and Ludikovský (1964) have described various tools that might have been used by potters for forming and decorating pots.

Kilns such as those described above have several advantages over open, clamp or pit firing methods (Rice 1987, Rye 1981). They are far more efficient in the use of fuel, for although 30 - 40% of the heat generated may be lost, this compares well with the 80 - 90% that is lost in an open firing. Control of the firing atmosphere and temperature, virtually impossible in an open firing, is achieved with a combination of specific types of fuel and air vents in the kiln superstructure. The maximum temperatures achieved in updraft kilns vary between 900 and 1100 degrees centigrade, depending on the types of fuel used and the location of the kiln. These advantages are achieved at some cost. A kiln represents an investment, not simply in the building, but also in the maintenance, which is a requirement after every firing (Rice 1987:162). They must be designed and located with regard to the local weather conditions. The process of firing, which may take several days, requires a regular cycle of stoking, together with constant monitoring of the state of the fire, the flues and the kiln itself. Bernard Leach has described a firing in the following terms:

'The firing is the climax of the potter's labour, and in a wood kiln of any size it is a long and exhausting process. Weeks and months of work are at stake. Any one of a dozen things may go wrong. Wood may be damp, flues may get choked, bungs of saggars may fall, shelves give way and alter the draughts, packing may have been too greedily close, or for sheer exhaustion one may have snatched an hour's sleep, handing over control to someone else and thereby altering the rhythm of the stoking. At white heat things begin to move, to warp, to bend, the roar of combustion takes on a deeper note - the heavy domes crack and tongues of flame dart out here and there, the four minute stokes fill the kiln shed with bursts of dense black smoke and fire. Even in the East, where hand work is usual and labour specialised, a big kiln firing has the aspect of a battlefield where men test themselves to the utmost against odds' (Leach 1976:195-6).

Clearly the investment represented by a kiln is more than simply the input of labour required to build the structure, in much the same way as the investment in a fast wheel has more to do with the skills required for its effective use than with the labour of building it.

4.6 Archaeological approaches to craft specialisation.

The definition of craft specialisation in prehistory is one that has attracted a considerable amount of debate. Apart from the intrinsic interest of such questions, this has been prompted by the suggestion that there is a relationship between a high level of social complexity and the existence of craftspeople who derived the whole, or at least a substantial part, of their income from non-agricultural work:

> 'specialization begets specialization, and this is precisely why state-level societies and full-time specialization go together. The connection is neither arbitrary or taxonomic' (Muller 1984:492).

Such a view has been supported by reference to cross-cultural ethnographic studies:

> 'Economic specialisation is a generally accepted concomitant of social complexity. Cross-cultural studies of social complexity have suggested significant relationships between occupational specialization, urbanization (measured by settlement size), and cumulative information content of the culture ... From an ecological and evolutionary perspective, social stratification and economic specialization reflect the differential distribution of resources and the societal management of these resources' (Rice 1981:219).

Following this argument, as Rice has done (1981, 1984, 1987), specialisation becomes a definitive characteristic of a given society, reflecting the degree of socio-political complexity and, once identified, allowing the archaeologist to draw inferences regarding other aspects of the society. Conversely the definition of a society as 'complex' permits the assumption that certain aspects of craft production may well be specialised. Taking this relationship as a starting point, the definition and recognition of 'specialised production' and the precise form (full-time or part-time specialisation) which it takes in

particular circumstances (Rice 1987:188-91) becomes one of central importance in the classification of a particular society.

There are a number of problems with this concept of specialisation, both at the level of the definition of the term and particularly with the use of it as a category definitive of a particular state of social complexity. Regarding the definition of the term, Muller has summarised a distinction often made within it:

> It seems most useful to restrict *specialist* to situations in which the livelihood of the person is gained through the activity in question. *Full-time specialists* would be those whose daily schedule would be dominated by the specialized activity. *Part-time specialists* would derive some substantial proportion of their livelihood from the activity, but would also be dependant upon other, more broadly based activities'. (Muller 1984:491, original emphasis).

In practice such a straightforward definition inevitably runs into problems when applied to particular cases. As Rice (1987:188-9) points out it is not always easy to draw clear distinctions between groups of potters on the basis of the intensity of labour even in ethnographic situations, and has cited the case of the famous Chinese centre of porcelain manufacture, Jingdezhen where the population rose enormously (reaching over 400,000) during the potting season as farm labourers and others arrived to assist in the work. As she comments:

> 'One may question how an understanding of producer specialization is advanced by distinguishing these Chinese workers as part-time versus full-time specialists' (Rice 1987:189).

In an archaeological context the nature of the data serves only to compound these problems. Various methods have been employed to overcome such problems, including assessments of the degree of standardisation amongst the vessels produced (Nicholson 1989:133, Rice 1984:47) or of the level of labour input into individual vessels (Feinman, Upham and Lightfoot 1981). That the problem of definition and distinction remains intractable would seem to indicate that the concept of craft production as being either full- or part-time is an over-simplification of a complex reality.

There are two major problems with the use of craft specialisation as a concept in the context of European prehistory. The first relates to the existence of climatic constraints upon pottery production. Ethnographic studies, summarised by Arnold (1985), have indicated that, in order to dry adequately before being fired, vessels require weather conditions that do not exist for the whole year in temperate Europe. At present there are no indications of the existence of heated drying sheds in Europe before the

Roman period and it may consequently be inappropriate to speak of full-time ceramic specialists in prehistoric Europe. The existence of such a constraint upon pottery production cannot be held to relate to the level of socio-political complexity.

A second, and more serious problem concerns the very concept of specialisation. To speak of an individual specialising in a particular task implies a certain conception of time and its allocation to tasks defined as work, and may perhaps be seen as a result of a mode of thought formed by a capitalist work ethic, one in which the extraction of the maximum output from individual workers is of prime concern. To suggest that this may not have been the case in prehistory might be to risk creating an idealised 'golden age', before the alienation of labour, but the point is that in a non-capitalist context other forms of organisation may be envisaged, under which the allocation of time to different tasks may be predicated upon different organisational principles. Under such conditions full-time specialisation may well be unknown, and part-time specialisation may take a variety of different forms, depending upon local factors such as the degree of possible integration with the agricultural system and the status of those who are involved in different types of pottery production. Amongst the Sirak Bulahay of Cameroon for example the female potters are also midwives and healers, their husbands being smiths, undertakers and ritual specialists (Sterner 1989:453).

Problems such as these lead inevitably to the conclusion that direct links between craft specialisation and other aspects of society, particularly high levels of socio-political complexity are, at best, contentious. In place of such assumptions Hodder (1981, 1986) has stressed the necessity of integrated and context specific interpretations of all aspects of material culture. A more profitable view of 'specialisation' might be to see it as a development of craft skills which could take place in a variety of situations and not simply those associated with socio-political complexity as conventionally defined. Such a view would take account, for instance, of the centralised pottery production suggested for the Neolithic period by Peacock (1969), for the Bronze Age by Ellison (1981) and for the apparent variations in the organisation of pottery production described by Nicholson (1989:136) in the *Hunsruck-Eifel* Culture (Hallstatt D - La Tène B). It would also go some way towards situating pottery production

> 'as a social practice, a part of the production and reproduction of social life' (Thomas 1990b:83).

It would seem to be preferable to speak of potters as having a greater or lesser degree of specialist knowledge, rather than as being specialists in the contemporary sense of the word. The context within which this knowledge was acquired then becomes the point at issue.

4.7 Methods of production and mode of production.

Given the information about the production of slip decorated pottery outlined above it is now possible to begin to reconstruct certain aspects of the mode of production, as outlined in chapter 3. The sequence of production is summarised in Table 4.3

This simple outline of the sequence of production provides a framework upon which it is possible to build a more detailed picture of the production process, including inferences about the labour input and the investment in hardware and facilities.

4.7.1 The organisation of pottery production.

Table 4.4 presents a suggested reconstruction of the mode of production for the slip decorated pottery, based upon the information set out in the previous sections of this chapter. The level of investment in the hardware and the skills required for the production of the pottery indicate a workshop level of organisation. The range of potential variation, between the individual and the nucleated workshop (described in Table 3.2) is considerable, particularly regarding the organisation of labour. While it is impossible to distinguish between the involvement of family members and apprentices from outside the immediate family group from archaeological data, it is clear that the artisans responsible for the slip decorated pottery possessed considerable specialised knowledge. Roux (1990:144) has referred to an apprenticeship of ten years being required to perfect the skills required by a potter working with a wheel, in contrast to only a year required for learning the techniques of coil building. The same author has also noted that in a number of agrarian societies, where the majority of tasks can be carried out by all members of the group, specialised activities, such as the production of wheel thrown ceramics and iron working are the preserve of particular sections of the community, defined by caste or other forms of classification (1990:146). While it may be dangerous to generalise from contemporary examples to past situations, such a view of the production of slip decorated pottery is persuasive, and I would suggest that it was produced by small groups of potters who shared a level of skill unavailable to the majority of the

population. In the following chapter I shall show that the pattern of distribution supports this view, indicating as it does the existence of the centralised production of the pottery.

To take this point further it is necessary to consider the production of slip decorated pottery (and other wheel thrown wares) in relation to the other parts of the Late Iron Age ceramic assemblages. The range of types of pottery and the range of technologies employed in their production suggest that a number modes of production co-existed in the La Tène context. It is possible to see some form of household production as responsible for a large part of the utilitarian and domestic component of any given assemblage, including vessels such as storage jars, while fine wares, requiring a greater investment of labour were produced in a more specialised, and perhaps centralised, context. Having said this, it is also apparent that certain 'coarse' wares were produced and exchanged within local regions, as Salač (1990b: Figures 10, 11) has shown for Northwestern Bohemia, and can be seen in the case of the *jatte d'Aulnat* in Central France (Pearson, Cumberpatch and Collis in prep.), which suggests the existence of intermediate forms of organisation, possibly based on seasonal household production and sub-regional distribution. A more complicated case may be the simultaneous production of wheel thrown La Tène wares and the various kinds of coarse wares ('Dacian', 'Przeworsk', 'Lausitz') in Slovakia, Poland and Hungary.

A particular, and unusual, case is that of the *Graphittonkeramik*. From the evidence presented in chapter 2 it seems likely that finished vessels, graphite rich clay and raw graphite (for temper) were all circulating, though it is impossible at present to be certain of the relative importance of each. The standardisation of the vessels and the characteristics of their distribution both point to centralised, intensive production, although this was probably still subject to seasonal constraints.

In the absence of detailed studies of the various types of fine wares, it is difficult to be certain how many of these were produced alongside the slip decorated pottery. One way of tackling the problem is to consider the methods of production employed for each. Preliminary observations of the pottery from Aulnat (Central France) suggest that at least one technique, that of fitting an inserted base after the forming of the body, is common to both slip decorated and black burnished vessels, which might imply that both are the product of the same workshops, though more detailed analysis is required to confirm this.

The quantification of pottery assemblages is, at present, rare in Europe but, generally speaking, slip decorated pottery forms only a small part of the assemblage on even those sites producing the largest

quantities. Calculations of the percentages of fine (i.e. wheel thrown) pottery in features from Northwestern Bohemian sites (Salač 1990b: Table 2) show that it rarely exceeds 10% on minor sites and even at Lovosice is below 25%. On most sites slip decorated pottery forms less than 1% of the total assemblage. Čižmář quotes figures of less than half of one percent for two pits from the *Vorburg* at Závist (1989b). Though such figures do not take account of the nature of the deposition within the features considered (Hill:unpublished), it is unreasonable, on the basis of such figures, to assume that slip decorated pottery was produced in sufficient quantities to be the sole product of any one workshop. An alternative view is that it was produced alongside other types of vessels, principally perhaps those which required similar types of technology, but perhaps not to the exclusion of others. The extent to which coarse ware and fine ware were both produced within the same context cannot, at present, be estimated.

In the previous section I suggested that, in the absence of evidence for heated drying sheds (there is no indication that the building at Velké Hostěrádky was heated), full-time, year-round pottery production was unlikely to have been practiced in Central Europe. This raises the question of what other means were available to potters to supplement their income from pottery. The most obvious alternative is agriculture, as it seems clear that agriculture was a major component of the economy on most of the settlements within which kilns have been found. In addition a number of kilns have been found within the type of compound that is normally interpreted as an agricultural and domestic unit (*Gehöftsiedlung*). Examples include Staré Hradisko and Liptovská Mara 7. One problem with this scenario is that the late spring, summer and early autumn, the busiest times of the agricultural year, would also have been the best times to make pots. This raises the possibility that pottery production was organised alongside other crafts, and it may be significant that at České Lhotice the kiln was found in an area with evidence of a number of other industrial activities, including metallurgy. At present this is the only site at which such an association is certain; excavations at Lhotka-Lovosice were insufficiently well documented to supply such contextual information and few of the non-agrarian production centres have yet been excavated on a large enough scale to produce relevant evidence.

A further possibility is that a number of unobservable activities could be involved. In the case of the Sirak Bulahay, referred to above (Sterner 1989), female potters were also involved in midwifery and healing. Such activities, though irregular in occurrence, could serve as a basis upon which obligations (of whatever kind) could be accrued, to be transformed into a practical form when required.

4.8 The organisation of other forms of craft production.

Having discussed the organisation of pottery production, I shall now try to set this into a wider context by considering the organisation of other forms of craft production.

The key to the forces of production in the Iron Age was iron itself, but, although there have been a number of studies of the technology of iron production (Pleiner 1980, 1982, Pleiner and Princ 1984), relatively little attention has been paid to the organisation of production, most conclusions being based on rather impressionistic data (Collis 1984b:87). The overall picture that emerges from the Middle and Late La Tène is one of a division between the extraction and smelting of iron ore and the subsequent working of ingots and blooms to produce iron tools and other goods. Until recently it seemed possible to make a case for the centralisation of iron working in La Tène D, but the studies by Salač (1990a) and Pieta (1982a) of the distribution of slag from forges suggest that the craft of the blacksmith continued to be a widely distributed one throughout the period. Salac's conclusion, that each village had its own blacksmith who combined work for a local region with farming, is persuasive, and seems to be born out by the Pieta's survey of the evidence from Northern Slovakia. This may be related simply to the difficulties of transporting unrefined iron ore, but it certainly has important implications for the economic integration of different regions and for the relationships between them.

In terms of a reconstruction of the mode of production, the split between the two parts of the process of iron production is a factor which immediately increases the level of complexity involved. The implications include some form of contact between the producers of raw iron and the locally based smiths, and a demand by the latter for the products of the former. This suggests that the output of raw iron was, in some sense, adjusted to the level of demand and perhaps to seasonal variation in this demand. In this connection the occurrence of currency bars and ingots of a standard weight during the Middle La Tène can be seen as the material manifestation of some type of formal relationship between the producers and consumers of iron.

Such an arrangement would seem to imply the existence of local specialists, but even with the production of items such as weapons, the quality of the work seems to have varied widely. Collis (1984b:87) refers to the high quality of the swords made by smiths in Noricum and the Alpine area, and Pleiner has made a similar point in the case of a number of iron tools from the oppida (1981:106, 1982). Elsewhere, however, he has described swords from Stradonice and Staré Hradisko as being of low quality (1980:394). The implication of this variation in the quality of the work, when taken together with the

widespread occurrence of iron working debris, is that iron working was a craft subject to few restrictions and practised by smiths with varying degrees of skill. It does not seem possible to sustain a view of the industry as based upon sectional control analogous to that of the medieval guilds (Collis 1984b:132-6). A more likely situation is one similar to that described by Salter and Ehrenreich for the southern English Iron Age

> ' ... the distribution of knowledge was uneven and flexible. ... The existence of an established hierarchy of blacksmiths ... is probably not an accurate description of the state of iron technology. A broad distribution of blacksmiths each with his own secrets and specialities is probably more apt.' (1984:160).

As with the production of pottery it is difficult to define the organisation of labour in all aspects; whether it was based on extended caste or kin groups (Roux 1990), or on some other form of social group (age or gender based for instance), it is impossible, at present, to determine. The variety in the level of skill demonstrated by the blacksmiths however may have created the conditions for the existence of complex patterns of exchange and interaction as the products of certain artisans were sought preferentially.

Further complexity is added to the picture by the apparent variation in the organisation of non-ferrous metallurgy. In some cases this seems to have been closely linked with iron working and may have involved the same individuals, while in other cases the two crafts appear to have been separated. The extent of this separation and the regularity with which it occurs is difficult to assess, but it is not a simple matter of chronological change, or of a difference between oppida and rural sites, as the examples cited in chapter 2 indicate.

A similar kind of semi-specialised production is indicated in the case of the quernstones quarried and worked in northern Bohemia. The quantities of stones involved do not indicate the presence of full time specialists, but the quality of the finished articles and their distribution implies something more than opportunism. Again this type of production could have been associated with agriculture or with some other type of craft activity. In the case of those querns made of inferior grades of stone, the type of stone indicates local production, and the quality of the work is that of only semi-skilled artisans.

In contrast to the goods described above, the production of sapropelite bracelets and of glass rings and beads were both highly centralised. The former, because of the rarity of the raw material, were produced within a area that was also an important source of iron ore. There is nothing in the nature of the production to suggest that this was at any level more complex than household production, but as suggested above, it is possible that it was connected in some way with iron smelting and working. The

production of glass ring beads and bracelets appears to have had a certain amount in common with that of the slip decorated pottery, and I shall discuss this aspect in greater detail in the final chapter.

Other branches of craft production, mainly involving perishable materials, have been described in chapter 2. It is to be expected that all households would have been engaged in a variety of these activities, an expectation which is born out by the widespread occurrence of, for example, woodworking tools, spindle whorls and loom weights. The extent to which there were specialised branches of these crafts (such as the production of fine cloth, barrels, wheels and bone objects) remains obscure.

The location of craft production within settlements varies. There are well attested cases of apparently separate industrial areas on a number of the oppida, including Hrazany, České Lhotice and perhaps Závist and Stradonice (Jansová 1988, Princ 1986), but equally these are not entirely exclusive and traces of metalworking have been found in the inner areas at Hrazany (Jansová 1988:312) and in greater quantities at Staré Hradisko (Meduna 1970a). Collis has suggested (1984b:136) that this relates to two parallel forms of organisation, one analogous to the medieval guild system, the other under aristocratic control. In the light of the information presented in this section, I would suggest that the analogy with the guild system may be misplaced, though there may have been some form of restriction on access to craft skills. The question of aristocratic control depends upon the identification of the sources of power, which are, at present obscure.

In the previous section I suggested that it is unlikely that the production of pottery could have been a full time occupation, and the same is true for the majority of the crafts described above. All could have been combined with some other occupation, most probably farming, but perhaps including other branches of craft production. In the case of various forms of household production such as weaving, spinning and carpentry this probably involved the manufacture of goods for domestic use, but I would suggest that of other types of goods, involved in local and even inter-community exchange, were also produced on a part-time basis. Such a regime can be characterised as that of the 'individual workshop' as described for the production of pottery in Table 3.2, and moving towards the nucleated workshop, though without full time specialisation. A provisional categorisation of the organisation of production in La Tène D, employing the modes of production devised for pottery manufacture, might be as set out in Table 4.5

A considerable number of questions remain regarding the scheme set out in Table 4.5. At the practical level there remains a great deal of work to be done on the organisation of the production of all types of goods, and particularly on that of pottery and metal items. At the theoretical level the distinction

made between local and central workshops is one that owes as much to the organisation of circulation and consumption, to be described in the following chapters, as it does to the organisation of production.

Chapter 5.

The circulation and distribution of slip decorated pottery.

5.1 Introduction.

Having described the methods and organisation of the production of slip decorated pottery, I shall now to move on to consider the question of distribution and circulation. A large part of the chapter will be concerned with a description of the different methods applied to the problem and the remainder with a synthesis of the results, including a discussion of the problems encountered in the attempt to produce such a synthesis. The significance of the results in a wider context will be considered in chapter 6.

5.2 Sampling and sample preparation.

The examination and sampling of the pottery was carried out with five broad aims in mind. These were:

1) To assign as much of the pottery as possible to discrete petrological groups by means of macroscopic and microscopic analysis.

2) To determine, by means of the analysis of thin sections, the characteristics of the clays used in the production of the pottery, to define petrologically similar groups of sherds and to suggest likely centres of production.

3) To investigate the existence of regional or other groups represented in the form and decoration of the vessels.

4) To discover the relationship between groups based upon characteristics of form, decoration and petrology and the degree to which these can be interpreted as relating to the circulation of the goods.

5) To contribute to a description of the methods of production employed in the manufacture of the pottery (see chapter 4).

With these aims in mind the following procedure was employed to process the material.

As described in chapter 4, as much of the slip decorated pottery as was accessible was examined and details of form, decoration, fracture pattern, fabric and surface characteristics were noted. To classify the sherds by fabric a corner of the sherd was broken in order to obtain a surface unaffected by the processes of burial, recovery, cleaning and conservation. The fresh break was examined with a X10 hand lens. Within each assemblage sherds were compared qualitatively in terms of texture, inclusions (type, density and proportions relative to each other) and, to a lesser extent, colour. The latter was generally

considered to be an unreliable indicator of similarity as variations occurred within individual vessels and even within individual sherds (Rye 1981:119). For each site a reference collection was built up, being added to as new fabrics were identified. Throughout the study a principal of 'splitting' rather than 'lumping' in the definition of fabric types was followed in an effort to minimise error. When the assemblage had been classified in this way, the reference collection was drawn and samples taken for petrological analysis. In addition to these samples, others were taken from sherds exhibiting unusual characteristics, (such as abnormal fracture patterns) for closer examination.

A number of sherds were obtained from the normal range of archaeologically marginal situations, informal field walking, spoil heaps and unstratified and disturbed deposits. These were not incorporated into the reference collections but were described separately and reserved for special purposes such as refiring experiments (I am indebted to a number of individuals for providing these samples).

Drawings and photographs were taken of the sherds in the reference collection and of the full range of rims, bases and decorative motifs. These, together with written descriptions and sketches formed the basis of the typological analysis.

Before thin sectioning, each reference collection was further reduced by examination using a X20 Vickers binocular microscope. The collections were examined self referentially so that no comparison was made between the material from different sites at a macroscopic level. Following this the remaining sherds were thin sectioned for detailed microscopic examination.

5.3 Characteristics of the reference collections

During the macroscopic examination of the material it became apparent that some fabric groups occurred more frequently than others. The relationships between the different groups were examined by converting the simple counts of sherds of each fabric type into percentages and plotting the results as histograms which are reproduced as Figures 5.1 - 5.15.

In a number of cases circumstances dictated that the assemblages be examined on two separate occasions, and in some of these cases two separate reference collections were necessary. Certain of the histograms (Liptovská Mara, Pleszów and Zemplín) therefore consist of two sections, denoted by different fabric code numbers. In each case the form of the two sections is similar, though it would be hazardous to equate them directly.

More generally the histograms can be divided into three types, unimodal, bimodal and multimodal. The former type includes Bekasmegyer, Tabán-Gellérthegy, Staré Hradisko, Podłeze, Mogiła, Krzesławice and probably Zemplín and Pleszów. Třísov and Stradonice are characterised by a number of peaks, none consisting of more than 20% of the total. The remainder of the graphs (Komárno, Nitriansky Hrádok, Vyšný Kubín, Liptovská Mara and Esztergom) can be described as bimodal. In the cases of Komárno, Nitriansky Hrádok, Vyšný Kubín and Liptovská Mara the numbers of samples taken were low and in the first two cases there was no indication of the degree to which these were representative. Regarding the remaining bimodal and multimodal cases these would seem to represent sites drawing upon a variety of sources either of finished vessels or of clay from which the vessels were made.

5.4 The spatial distribution of slip decorated pottery.

There are pronounced disparities in the representation of slip decorated pottery both within and between different types of sites across the study area. Table 5.1 summarises the available information regarding the quantities of material from different sites. In addition a number of sites are recorded as having produced sherds or complete vessels which have subsequently been lost (full details are given in appendix 1). There appear to be a number of categories of assemblage, based on the numbers of sherds found. Such a categorisation is, to an extent, problematic, in that the majority of assemblages are not only inevitably incomplete, but are based on excavations that are not comparable in terms of the area excavated, the methods of recovery and recording, or the conditions under which excavation was undertaken. Tentatively however a basic split into large and small assemblages may be made, with only a few sites realistically falling into an intermediate category. In Table 5.1 this intermediate category (10 - 70 sherds) is artificially enlarged by the inclusion of a number of sites from which it is either certain, or highly probable that more slip decorated pottery has come than has been recorded. In addition a number of sites in the lowest category may more properly belong in the highest, for similar reasons. Those sites which have certainly produced more than the numbers of sherds recorded here are Liptovská Mara and Hrazany, while it seems highly likely that the limited extent of the excavations and the disturbed nature of the sites at Komárno, Tyniec and Wielicka have adversely affected the recovery of Late La Tène material, including painted pottery. Excavations at České Lhotice, Nevězice and Bořitov have also been limited in extent. In the absence of publication, the nature of the site at Nitriansky Hrádok remains obscure, and the

publication of the Late La Tène phases of Závist has lagged behind that of the earlier phases. In spite of these problems it does seem possible to distinguish certain regional characteristics within the overall pattern of distribution.

Bohemia and Moravia are dominated by single sites (Stradonice, Třísov and Staré Hradisko) with no close competition, in terms of the quantities of material, from other sites. In theory this pattern could change if other oppida were to be excavated on a larger scale, although the results obtained from the excavations at Závist (Drda 1981, Čižmář 1989b), Hrazany (Jansova 1986, 1988) and České Lhotice (Princ 1986), (even given the comments made above) suggest that it is unlikely that the assemblages from these sites approach those from the three major sites in terms of size. It is impossible, at present, to judge the exact status of either Hostýn or Nevězice. Unconfirmed reports suggest that a few sherds of slip decorated pottery were found in the small scale excavations at Hostýn, though they are not mentioned in the interim report (Ludikovský 1981). Nevězice has likewise produced only a handful of sherds (only two were available for thin sectioning), although excavations have been more extensive than those at Hostýn (Drda 1986).

On those sites which are not oppida the quantities of slip decorated pottery are very low, normally representing only one or two vessels. The overall distribution of slip decorated pottery in Bohemia is shown in Figures 5.16 and 5.16.1, and certain features should be noted. There appear to be a number of distinct areas of concentration, notably in the Krušne Hory foreland (Figure 5.16.1), in the eastern part of central Bohemia and in the Strakonice basin. In part these follow the overall distribution of La Tène settlement, although it is clear that other factors are also involved. These include proximity to major rivers and to areas with important raw materials and good quality agricultural land (such as the Krušné Hory and the Strakonice basin). The majority of the sites concerned are villages of the type described in section 2.2.1, though precise details regarding size and relative status are not clear in all instances. In one case at least, that of Lovosice, the site is of considerably greater size and importance (in terms of the range of functions present) than the average, and it perhaps no coincidence that the numbers of sherds from this site is greater than that from other undefended sites. At present there are at least eight sherds, representing the same number of vessels, originating from a number of relatively small scale excavations. The implication is that the slip decorated pottery did not reach all types of sites equally and, in addition, did not reach all sites of the same type equally.

The situation in Moravia (Figure 2.6) follows this trend. The undefended sites with slip decorated pottery follow, in general terms, the distribution of settlement, but there is little apparent regularity to the distribution. A number of the sites at which slip decorated pottery has been found can be classed as 'non agrarian production centres' (section 2.2.2), though they are by no means all of this type, and not all sites of this type have produced slip decorated pottery, though this may in part relate to problems of research bias.

Different areas of Slovakia, Poland and Hungary exhibit varying traits in terms of the distribution of slip decorated pottery and these are illustrated in Figures 5.17, 2.11 and 2.15.

The Danube plain (southwestern Slovakia and northwestern Hungary) forms a distinct unit with a number of similar sites of central type along the river. All of these have produced relatively large amounts of slip decorated pottery. Devín and Bratislava, particularly the latter, have produced a great deal more material than was available for examination or analysis (Zachar pers. comm., Pieta pers. comm.), and the situation at these sites is actually closer to that at Esztergom, Bekasmegyer and Budapest (Tabán-Gellérthegy) than the figures suggest. The same may be true of Komárno; haphazard excavations have produced a significant number of sherds (given the circumstances), which, together with other information, suggests that this too was a site with some type of central role (Pieta pers. comm.). Away from the Danube itself, but linked to it via its tributary, the river Nitra, lie the sites of Nitra itself and Nitriansky Hrádok, both of which can claim to be central sites, and which have produced medium sized assemblages of slip decorated pottery.

Slip decorated pottery has been found on only four undefended sites in the area, Iža, Kamenín, Ulany nad Zitavou and Chotín. This pattern may imply either that the population of the plain became more centralised in the later period, the distribution of cemeteries indicating relatively evenly distributed populations in the earlier La Tène (Pieta 1981: Figure 1), or that the use of slip decorated pottery was virtually restricted to the central sites. There is, in addition, the problem of research bias. In Hungary very few open sites have been excavated, and nothing is known of the immediate hinterlands of the central sites, while in southern Slovakia the cemeteries have attracted more attention than either the contemporary or the later undefended settlements.

In Eastern Slovakia Zemplín seems to be an obvious centre for its region and the site has, according to the excavator, produced more slip decorated pottery than any other single site in Czechoslovakia (Benadik pers. comm.). Only a fraction of the total quantity was examined, the bulk

being inaccessible, as were the finds from the undefended sites in the vicinity. These undefended sites are, with one exception, all within twenty kilometres of Zemplín, the resulting distribution strongly resembling that of a 'solar central place' (Smith 1976, Collis 1984b:183-4). The extent to which these undefended settlements are typical of the whole area is unclear, survey and excavation being limited.

In Northern Slovakia the extensive excavations at Liptovská Mara have produced a large assemblage of slip decorated pottery. As described in chapter 2, this site is one of a number located so as to fulfil a central role with respect to a relatively small and discrete geographical area. The majority of these sites have received only passing attention, and, as a result, have produced only small numbers of finds, including slip decorated pottery. An exception is Vyšný Kubín, where excavations over a number of years have yielded a medium sized assemblage. The quantities are not comparable with those from Liptovská Mara and, in the absence of excavations on comparable sites, it is difficult to know the extent to which either is typical. Research in the Liptov basin has included the excavation of undefended and small enclosed sites, and a number of these have produced small quantities of slip decorated pottery.

The pattern of distribution in Czechoslovakia and Hungary is dominated by the central sites which have produced the largest assemblages of slip decorated pottery. There are indications of possible variations in the assemblages on other types of site (such as at Lovosice and on some of the industrial villages), though at present the quality of the data does not permit detailed comparison. In contrast the situation in Poland was very different.

The distribution of slip decorated pottery around Kraków shows far less centralisation. Four sites (Krzesławice, Mogiła, Pleszów and Podłeze) have produced large assemblages of slip decorated pottery and the material from other sites, which have not been as extensively excavated or which have been damaged by later activity (including Tyniec Klaštorisko and Wielicka), may represent the remains of assemblages of almost equal size. Other sites, which have not been as extensively excavated, are characterised by smaller assemblages.

The significance of these patterns of distribution will be considered in more detail in the final sections of this chapter, but it is appropriate here to make some preliminary summarising statements.

1) The largest assemblages are found on oppida and the functionally similar central sites in Slovakia and Hungary.

2) In Bohemia and Moravia there are clear differences between the individual oppida in terms of the quantities of material present. Such differences between central sites seem to be less marked in Slovakia and Hungary.

3) There appear to be differences between the patterns of distribution of slip decorated pottery on undefended sites in the western and eastern parts of the study area. The latter area is characterised by localised distributions apparently focused upon individual central sites, while the former seems to relate more closely to the distribution of raw materials (including agricultural land).

4) The position of undefended central sites (such as Lovosice) and industrial villages is poorly understood with regard to differences in the quantities of slip decorated pottery found on them and on village sites. This is only one aspect of a more general lack of understanding regarding the nature and role of these sites and their relationships with both the oppida and the rural sites.

5) The situation in Poland differs from that in other parts of the study area with an apparently more even distribution of slip decorated pottery amongst sites of equal size and equivalent or complementary functions.

5.5 Typological approaches to the distribution of slip decorated pottery.

For analytical purposes the treatment of stylistic variation within any predefined class of objects can be divided into the causes and the significance of such variation. The causes are closely bound up with the reasons for existence of decoration on the goods under consideration. The origins and significance of the practice of decorating artefacts are beyond the scope of this thesis, and lie in the nature of human perception of the world and the need to impose some form of control over it. Such control is possible through the creation of categories and use of a variety of symbolic systems to represent these categories (Miller 1985:1).

The significance of stylistic variation to the archaeologist can be taken on two levels. Firstly, linked with the causes of variation, we might ask what significance (or significances) the variations had to the users of the vessels and how this affected their treatment, use and disposal. Secondly we might ask how we, as observers from outside, might use the variations that we define to assist in our understanding of a given society.

Two practical problems associated with the slip decorated pottery have imposed constraints upon the analysis presented here. The first of these is that of the fragmentation of vessels. This occurs

differentially within the archaeological record and for this reason most of the more successful typological and other studies of decoration have tended to take material from contexts such as inhumations, where complete vessels have been deposited and sealed relatively rapidly.

In the case of the slip decorated pottery from the study area, the material occurs in settlement contexts and, more rarely, in contexts linked to ritual destruction, such as Liptovská Mara I (Pieta 1982a) and there are few surviving examples of complete vessels. It is consequently impossible to discuss the full range of motifs or the internal relationship of motifs to each other with any confidence (cf. Valentová 1975).

The second problem is again common to all studies of decoration and is the problem of defining the minimum unit of decoration to be considered. This problem has been extensively discussed in relation to painted pottery from the South Western United States (Plog 1980, Jernigan 1986), and in more general terms by Hodder (1986). Though the designs dealt with in the United States are considerably more complex than those which are being dealt with here, the problem remains: how are we to decide what constitutes 'a motif' given that most designs are composed of more than one single element? In the case of the slip decorated pottery no clear answer can be given. The problem of the fragmentation of the vessels means that while a number of possible motifs (such as grids, parallel thin and thick lines or linear 'chessboard' patterns) can be defined, to go beyond this and to consider their relationship to one another is, in practise, impossible.

These two problems effectively ruled out any analysis of the details of the motifs, but were not serious enough to prevent all study.

The examination of the pottery led to an intuitive recognition that variations in design motifs and form do indeed exist across the study area, confirming the impression gained from a general survey of the literature on a European scale (Jorns 1960, Crişan 1966, Maier 1970, Bŕeň 1973, Périchon 1974, Valentová 1975, Moosleitner 1975, Guichard 1987, Vaginay and Guichard 1988, Périchon and Péronnet 1988). This immediately raised two questions, the first concerning the possibility of demonstrating empirically the existence of similar and related regional groups, and the second concerning the relationship between regionally distinctive, typologically defined groups and groups defined by petrological analysis. The analytical scheme was devised primarily in order to examine these problems.

Two aspects of design variation can be envisaged. The first may be termed intentional variation, referring to variations that are the result of some purposive action by the creator, for whatever reason

(aesthetic or symbolic-functional). The second type of variation may be termed habitual, referring to variations that are the result of differences in the motor habits of individual potters. These will give rise to different patterns of variation, the former between zones of similar style and the latter both within and between such zones.

All sites for which quantified data was available were used in this analysis, while those from which information was not quantified were used corroboratively.

5.5.1 Decorative motifs.

The following motifs are ones that can be considered to be the result of intentional variation, as defined above.

Red and white bands

Single colours (red or white)

Wax - resist decoration (spots)

Incised motifs

Grey decoration

Red or white motifs

Use of unpainted areas

Imposition of red over white

Regular differential painting of different parts of a vessel

Habitual variation, variations resulting from the motor habits of individual potters, are more difficult to identify, particularly given the fragmentary nature of the pottery. In practice only the separation of red and white bands by narrow bands of unpainted clay could be classified as this type of variation with any confidence, though others probably existed within the various grey motifs.

The variables recorded are detailed in Table 5.2 and in the key which accompanies it.

Clearly any single sherd could fall into several categories. The basic categories, within which sherds are counted only once are given in columns A to N (inclusive). The motifs recorded in columns O to R occurred in association with others. The proportions of motifs of different types on a number of selected sites are illustrated in Figures 5.19.1 - 5.19.6, in the form of histograms.

While one may assume that there are numerous small variations in the grey decoration resulting from habitual factors, none have been defined, due to the small size of the sample, the fragmented nature of the material and the high degree of internal variation in the grey motifs.

The fragmentation was, on most sites, of such a degree that it was impossible to draw any conclusions relating to internal relationships between motifs such as slipped and unslipped areas or grey decoration and the red and white bands. The only such regularity in the decoration was a tendency for wider bands to be located on the widest part of the body of the vessel.

The general background is of single colours and red and white bands, with or without narrow unslipped bands between them. The data presented in Table 5.2 indicates little significant variation between sites at this level. Variations can be seen in the limited range of motifs discussed in the following section, and, as will be discussed in section 5.5.5, in certain vessel forms.

5.5.2 Inter-regional variation.

On the basis of the details given in Table 5.2, and in the associated histograms (Figures 5.19.1 - 5.19.6 it is clear that a number of motifs are strongly associated with certain areas. These are:

Broad red wavy bands

These occur only in southwest Slovakia and Hungary. In addition to the sites for which figures are available, (Esztergom, Tabán - Gellérthegy and Nitriansky Hrádok) they are also present at Bratislava, Devín (Zachar 1987, Pieta pers. comm.) and Százhallombatta (Kovács pers. comm). Examples are illustrated in Figure 5.22 and Plates 5.1 and 5.2.

Wax resist decoration

Consisting of lighter spots on a dark background the decoration created by this method (described in chapter 4) occurs only at Stradonice and Závist (Figure 5.20, Plates 5.3, 5.4), and is noticeable by its absence from other Bohemian sites, although examples have been found at Manching (Maier 1970: Figure 92) and at Decize in Central France (Périchon and Péronnet 1989).

Incised lines

Although occasional incised lines occur on material from a variety of sites, the only regular occurrence of this trait is in Bohemia, where open bowls frequently have an incised wavy line below the rim. These are found most commonly in central Bohemia (Stradonice, Hrazany, Vlineves and Polepy), though recent finds from excavations at Soběsuky and Lovosice in northwestern Bohemia also bear this motif (Holodňák 1987, pers. comm. Salac pers comm.). The motif is linked to a particular form of bowl, hemispherical with a rounded or triangular beaded lip (Figures 4.1 and 5.24, Plates 5.3, 5.5). Definition of this form involves a number of problems of definition as it is one of the types often described as a 'bol Roanne', a class of vessels which includes a variety of hemispherical and globular forms. The type of vessel has been linked with the later slip decorated pottery (Maier 1970), although, as I have pointed out in the introduction, the Bohemian material seems unlikely to have been particularly late.

Other motifs do not appear to have any strong regional associations, though it is possible that the degree of fragmentation obscures regional differences in the grey geometric motifs. Certainly the assemblage from Stradonice includes motifs not found elsewhere in the study area.

5.5.3 Intra-regional variation.

The only indicator of intra-regional variation appears to be the presence or absence of grey geometric decoration, which, in Bohemia and Moravia is found only on vessels from the oppida and, with the exception of České Lhotice and Plavecké Podhradie (both of which have produced only very small assemblages), is present on all oppida. Minor sites area produce only combinations of single coloured and striped sherds.

A similar conclusion can be drawn for Slovakia, although the numbers of sites with an unknown or ambiguous character make the associations rather less certain. Grey geometric decoration is present on sherds from Zemplín, Bratislava, Liptovská Mara, Nitriansky Hrádok, Komárno, Vyšný Kubín, Divinka, Kežmarok, Machalovce and Nitra Hrad. With the possible exception of Machalovce all these sites can claim to have a central character. The remainder, all apparently undefended settlements, produce variations on the theme of single colours and red and white bands.

To date no rural sites in Hungary have produced the standard type of slip decorated pottery, and of the central sites which have, all but one (Százhallombatta) include vessels with grey geometric decoration.

In Poland the absence of any obvious settlement hierarchy makes it difficult to draw conclusions about the significance of variations in the representation of different types of decoration. Grey geometric decoration occurs at Krzesławice, Podłeze, Pleszów, Mogiła, Tyniec Klastorisko and Wieliczka, a distribution which might indicate some inter-settlement distinctions, but also reflects the extent of the areas excavated and the size of the assemblages recovered.

In the next section I shall discuss the patterns of variation which can be seen in the case of vessel form, but before doing so a brief note should be added on two groups of vessels from Hungary which, although they lie outside the scope of the thesis, represent the final expression, within the study area, of the tradition of slip decorated pottery. The first is a group of seventeen vessels coated with red slip and divided into zones by bands of geometric motifs (triangles, grids and bars). Within these zones appear human figures, animals and stylised plants (though human figures and animals do not appear together). The vessels are dated to the first and early second centuries AD (Maroti and Vaday 1980). Stylistically there may be a connection between some of the geometric motifs and those found on the Late La Tène material (Maroti and Vaday 1980:Table 5), but the principal motifs, which are those depicting animals and plants, have nothing in common with either the abstraction and stylisation that is typical of La Tène art (and appears to be reflected in the zoomorphic designs found on western European slip decorated pottery) or the non-figurative geometric designs found in Central Europe.

The second group is Pannonian provincial pottery, wheel thrown and bearing a single or double band of thin, hard red slip around the circumference of the vessel. So firmly is this linked with the Roman period that little of it was examined in the course of fieldwork. An examination of the relationship between indigenous potters and 'Roman' pottery styles requires a more broadly based research design than one involving only a single class of pottery. Beyond noting, for the sake of completeness, the presence of several sherds of this pottery at Drzovice in Moravia, no more will be said of it.

5.5.4 Variation in vessel form.

As with decoration, variation in vessel form can be divided into intentional and habitual categories. At the level of intention an initial division can be made between open and closed forms, equivalent to that between bowls and jars. Table 5.3 gives details of the classification, together with

references to the illustrations. Table 5.4 outlines the variations across the study area in terms of the numbers of different types of vessels recovered from the various sites. As in the case of the decoration there is a general background of typological homogeneity, within which certain forms stand out as regionally distinctive. Table B gives details of the variation in the representation of different forms on the sites for which quantified data is available.

5.5.5 Inter-regional variation in vessel forms.

In the course of the examination of the material there were indications, mainly at an intuitive level, that within some of the commoner classes (everted rim jars and bowls and beaded rim bowls), variations of a habitual kind occurred which might be indicative of different workshops or potters. The potential variability within individual classes of pottery (Impey and Pollard 1985) together with the fragmented nature of the assemblages makes such variation difficult to assess. In spite of this problem certain regionally distinctive forms can be identified and these are detailed in Table 5.4 and, for sites with larger assemblages, in Figures 5.18.1 and 5.18.2.

Inturned Rim Bowls.

Inturned rim bowls are a widely distributed and typical type of La Tène vessel, made in a variety of fabrics and presumably having a wide range of functions. Slip decorated examples are found across the whole study area, though as the Table 5.4 indicates, they are somewhat rarer in Bohemia than in other areas. Two principal forms can be distinguished morphologically, one with a pointed lip and an internal bulge (Figure 5.24.2:2, 4, 5), found most frequently in Moravia (notably at Staré Hradisko), and another with a more rounded profile, which in fact varies between a circular and an elongated 'teardrop' shape when seen in section (Figure 5.24.3:1, 2, 3, 5.24.1:1, 2, 3). This latter type occurs most commonly in Eastern Slovakia (particularly at Zemplín) and in Poland and Hungary. The wide morphological variation in these vessels and the difficulty of classifying them made it impossible to define specific local types, though it is quite possible that such variants exist.

Imitation or Miniature Storage jars.

The majority of slip decorated wares are versions of fine wares, but one small group, found in Northern Slovakia and Poland, with an outlier in Hungary, (Figure 5.23.3:2) imitates, in miniature, the

form and manufacturing technique used to produce large storage jars (Krausengefässe). The distinctive characteristic of this type of vessel is the form of the rim, illustrated in Figures 5.23.1:4 and 5.23.3 and Plates 5.9 and 5.10, (where it is compared with a full sized storage jar). The horizontal extension of the rim was added as a separate coil of clay, smoothed and marked on the upper surface with impressed grooves. The small painted types have a red band around the maximum circumference of the vessel.

'Chalice' rimmed jars.

Another distinctively eastern form is the 'chalice' rimmed jar, so called because of its cup like neck and rim. With the exception of a single example from Esztergom (Figures 5.23.2:4), this form occurs exclusively in northern and eastern Slovakia and Poland (Figures 5.23.1, 2 and Plate 5.7). In addition to the sites for which Figures are cited in Table 5.4, this form has also been found at Liptovská Mara (Pieta 1982 Figure 11:21), Krnča (Benadik 1967:Figure 200:1) and Tyniec - Klastorisko (Figure 5.23.1:2 and Plate 5.8).

Bowls.

In section 5.5.2, attention was drawn to the typical central and northern Bohemian open bowls (Plate 5.11), frequently decorated with an incised wavy line, normally below the rim. The distribution of vessels of this type and their presence in central Bohemia is reflected in the differences seen in Table 5.4 between the columns representing open and closed forms (also illustrated in the histograms (Figures 5.18.1 and 5.18.2) derived from this table).

A small number of bowls from Stradonice were distinguished by their corrugated profile (Figure 4.5), and were unique within the study area.

Jars.

Jars are defined as vessels with a constricted neck whose rim diameter is less than its height (Millett 1979). Intuitively a number of different rim forms were noted (and are illustrated in Figure 4.2) though only the overhanging rim jar (fig 4.2.1:1, 4.2.3:2, 4, 4.2.4:1, 5) could be defined closely enough to be typologically useful, the differences between the other forms being too subtle to be unambiguous. The 'overhanging' type appears to be restricted in its distribution to Slovakia, Poland and Hungary (although as the illustrations show it is accompanied in these areas by other variants). In the final analysis however

the ambiguities surrounding the classification of jar rims, like those affecting the majority of inturned rim bowls, proved to be too great to allow them to be used as regionally diagnostic forms.

Unlike the decorative motifs, vessel forms do not appear to have any intra-regional significance, similar forms occurring on a variety of types of site.

5.6 The interpretation of the typological data.

On the basis of the typological variability between vessels and assemblages, described in the preceding sections, certain regionally circumscribed patterns can be recognised. These are summarised in Table 5.5.

As I have described in chapter 2, these areas are not only distinguished by the characteristics of the slip decorated pottery, but also by other aspects of the archaeological record. I shall return to these wider implications in the final chapter.

The simplest interpretation of the pattern summarised in Table 5.5 depends upon the identification of centres of consumption, or use, (defined by the quantities of material recovered from each site) in each area. The obvious candidates in Bohemia and Moravia are Stradonice, characterised by the presence of wax resist decoration and incised bowls, Třísov in Southern Bohemia, defined more by the absence of typical central Bohemian forms than by the presence of any distinctive traits, and Staré Hradisko in Moravia with its typical inturned rim bowls. Each of these can be seen as a type of 'solar central place' (Smith 1976, Collis 1984b), though the precise nature of the relationship with the surrounding settlements may have taken one of a number of forms. A reasonable extension of this is to consider these sites as centres of production, although, as I pointed out in chapter 4, there is little actual evidence for this.

In the eastern part of the study area the situation is slightly more complex. The sites along the Danube share many characteristics, including extensive pottery workshops, and it is impossible to determine whether the vessels bearing the red wavy banded decoration were produced at a single centre or whether the trait is one shared by several production centres. Given the numbers of kilns found at Bratislava, Esztergom, Bekasmegyer and Tabán-Gellérthegy, I am inclined to suggest that the design is one common to the area rather than to a single workshop. A similar conclusion can be drawn from the distribution of the 'chalice' rimmed vessels and miniature storage jars in Northern Slovakia and Poland, and the overhanging rim jars and 'eastern' style inturned rim bowls in Northern and Eastern Slovakia, Poland and Hungary. A number of sites have the potential to be the location of manufacture, but it is

equally possible that production of these types of vessels took place simultaneously on several central sites. If this is indeed the case it would seem to indicate that there was a greater degree of interaction between central sites in the Eastern region than in the Western, a conclusion that has implications for the nature of exchange relationships in the two areas.

A distinctive characteristic of these distribution patterns is their apparent degree of discreteness. However it must be noted that although the regional distinctiveness of the different forms and motifs discussed above is marked, there are exceptions to the rule, exceptions which indicate an unknown degree of overlap in the case of the large numbers of vessels which are not of characteristic shape or decorative design. Amongst the exceptions to a general rule of strict regionalisation are a chalice rimmed jar (catalogue number 71.8.28, illustrated in Figure 5.23.2:4) from Esztergom, a miniature storage jar from Gellérthegy (G.1946/6, illustrated in Figure 5.23.2:2), a sherd with an incised wavy line from Tŕísov and the occurrence of 'Moravian' style inturned rim bowls at Stradonice (and possibly Zemplín). Within the category of rounded lipped, inturned rim bowls the range of potential variation is so great that a number of potentially discrete categories are probably subsumed within this single class. Consequently it has to be treated with caution as an indicator of inter-regional contact, although the similarity of some vessels, such as those illustrated in Figures 5.23.3:1 and 2, may be suggestive of closer contact. A connection between Stradonice and Staré Hradisko is by no means unreasonable (Cumberpatch and Pawlikowski 1988), and the distribution of other types of artefacts, described in chapter 2, indicate the extent of long distance contacts. On the evidence of the typology the primary sphere of the circulation of slip decorated pottery appears to have been an intra-regional one, although movement over longer distances is also probable.

A notable feature of the distribution of the distinctive vessels is the complete lack of any contact between, on the one hand Bohemia and Moravia, and on the other Slovakia, Poland and Hungary. The evidence of other artefacts does not, in general, support the idea of a complete lack of contact between the two areas, although the exchange of goods does not appear to have been particularly intense. Graphite clay and vessels were certainly moving from west to east as the analysis of the material from Čataj has shown (section 2.12). The best evidence for the movement of goods between the two regions comes from the area of the Púchov culture, where the earliest coin types (second century BC) originate in Bohemia (Pieta 1982:66). This early contact is also visible in the form of sapropelite rings. In the Late La Tène

period Bohemia and Moravia appear to have been a source of raw materials, including tin, graphite and glass, both as raw materials and as finished goods. Typologically distinctive brooches, belt fittings and other decorative items all point to contacts with the oppida (Pieta 1982a:185). It is possible that the circulation of slip decorated pottery (or at least of the typologically distinctive vessels) was restricted in a way that the circulation of other categories of goods was not. The extent to which such an interdiction also affected other types of slip decorated vessels requires methods of analysis other than the typological.

5.7 Petrological analysis.

Although the technique of thin sectioning is well known and has been extensively described, both in archaeological and geological literature (Peacock 1968, 1969, 1977, Read 1981, Gribble and Hall 1985, Nicholson 1989), its relative cheapness and accessibility has led to a proliferation of small laboratories, each with it's own individual history and idiosyncrasies. Likewise most individuals working in the field have their own techniques, and adapt these to the physical characteristics of the material in hand in particular ways. For these reasons I shall briefly describe the techniques employed to make the thin sections. At this point it should be noted that the samples from Stradonice were made by the staff of the Czechoslovak Geological Survey in their laboratories at Barrandov near Prague. The remainder were made in the Department of Archaeology and Prehistory at Sheffield University by the author.

The latter were made as follows.

1) The sherd selected was cut, using a diamond edged circular saw, at right angles to the plane of rotation of the potters wheel. The cut face was ground flat using a mixture of 600 grit carborundum powder and water on a glass plate.

2) Following drying (at 110 degrees centigrade for 1 hour) the sherd was impregnated with dilute epoxy resin (Araldite MY753 and HY956 thinned with Acetone) to bind the inclusions firmly into the clay and to prevent air bubbles forming between the sherd and the slide during stage 3. After hardening (3 - 4 hours at 100 degrees centigrade) the flat face was again ground flat using 600 grit carborundum powder and water.

3) The sherd was glued to the slide using Araldite MY753 resin and Versamid 140 hardener. Following the 30 minute curing time (at 100 degrees centigrade the sample was cooled and, if large enough, the excess trimmed off using the circular saw, to leave a flat face parallel to the slide.

4) Lapping, on a mechanical wheel, with a mixture of 80, 120 and 600 or 120 and 300 grit carborundum powder and water reduced the thickness to approximately 0.25mm. The final reduction, to 0.03mm, was carried out on a glass plate using 600 grit carborundum powder. The thickness was judged from the colour of the quartz crystals, which, under polarised light, turn from a yellowish colour to a silver grey colour at around 0.03mm. A Vickers M10A petrological microscope was used for these examinations. Once the required thickness was reached the sherd was washed, dried and covered with a thin glass cover slide to protect the sample. This was mounted using Canada Balsam.

5.7.1 Examination of the slides.

Following a preliminary examination of the thin section slides (Cumberpatch and Pawlikowski 1988) it was clear that the occurrence of distinctive minerals was both sporadic and rare.

The absence of such minerals in the fabric of the vessels caused two major problems. The first was that there was now no method, other than statistical analysis, of distinguishing fabrics from one another and thus all conclusions drawn from the analyses would remain probabilistic. The second was that the minerals present in the fabric are ubiquitous, and that consequently it would be impossible to suggest possible source areas for either the clay or the vessels on the basis of the composition of the fabric.

For these reasons (and in the absence of other practical possibilities) I decided that a programme of point counting would be the most appropriate method of analysing the material. Point counting, based on the identification of any point lying under the cross hairs of a microscope eyepiece, has the advantage of producing results based on the occurrence of common minerals, so that a particular fabric will be characterised by the ratio of minerals to each other and to the clay matrix itself, rather than simply by the occurrence of rare mineral grains (Nicholson 1989:101-3).

The procedure employed followed the multiple intercept approach described by Middleton et al (1985), and employed by Nicholson (1989). An element of grain size analysis was introduced by measuring the size of any quartz grains encountered with a graticule mounted in the microscope eyepiece. The results were recorded on the form reproduced as Figure 5.117. The equipment used was a Swift MP 3500 petrological microscope with a binocular head and a Swift electronic point counter. 200 points were counted on each thin section, the stage interval being varied according to the size of the sample so

as to obtain the maximum coverage of each sample. The sherds were examined at a magnification of X100.

When the results had been collected and collated it was clear that a number of possible variables were not in fact represented in the sherds examined. The statistical analysis of the data therefore used only the following nine variables:

Clay background

Quartz:

Total

Coarse - longest axis greater than 0.0658 mm

Medium - longest axis between 0.0329 and 0.0658 mm

Fine - longest axis less than 0.0329 mm

Muscovite

Biotite

Other minerals

Unidentified

5.7.2 Aims of the statistical analysis.

Given the absence of distinctive mineral inclusions to characterise groups of similar fabrics, some statistical method had to be employed to define such groups. On the advice of Dr. N. Fieller (Department of Probability and Statistics, Sheffield University) this procedure was divided into two parts:

1) An initial stage of exploration to determine the character of the data derived from the analysis of the thin section slides.

2) A more profound treatment of the data designed to yield information suitable for interpretation in terms of the archaeological situation.

I am grateful to Dr. N. Fieller and to Mr. R.K. Richards (Computing Services Department, Sheffield University) for their advice and assistance with the statistical analyses that follow.

5.7.3 Statistical analysis of the thin section data.

The results of the point counting were transferred from the original recording sheets to the software package DBase3+ on an Opus PC4 microcomputer. After preliminary checking, editing and

sorting the results were transferred to a Prime 9950 minicomputer. Initial exploration of the data was undertaken on this machine using the programme SCATTER_GINO, written by Dr. N. Fieller.

The SCATTER_GINO programme is capable of producing scatter plots from pairs of non-dependant variables. For each site 9 graphs were produced, based on plots of the following variables:

Clay : Quartz

Clay : Fine Quartz

Clay : Medium Quartz

Clay : Coarse Quartz

Total Quartz : Fine Quartz

Total Quartz : Medium Quartz

Total Quartz : Coarse Quartz

Fine Quartz : Medium Quartz

Fine Quartz : Coarse Quartz.

The emphasis was placed on the quartz grains and the clay background as the representation of other minerals was too low (normally between 0.5 and 2% of the total) to yield significant results using a graphical method of representation. The graphs produced were encouraging in that for most sites a number of fabric types regularly occurred outside major clusters. These clusters, and the outlying points, were ill defined and were of a generally ambiguous nature, but suggested that there were patterns in the data that could be further investigated using more sophisticated methods of analysis. A principle requirement of such a method was that it should be capable of dealing with all nine variables simultaneously, which SCATTER-GINO was not.

The method chosen was cluster analysis, using the CLUSTAN 3 package (Wishart 1987) on an IBM 3083 mainframe computer.

Cluster analysis can be defined as the discovery of a pattern of groupings within a set of data with as few assumptions as possible being made about the nature of that data (Shennan 1988:196). It is part of the broader field of numerical classification, fully discussed by Shennan (1988). While the definition given above seems at first sight to describe a statistical method ideally suited to thin section data, cluster analysis is by no means as straightforward a set of techniques as could be desired. The problems arise at

several levels. The first problem is the variety of methods that may be used to assess the difference or similarity between the members of a body of data and the necessity of choosing a suitable method for the task in hand. The second problem concerns the variety of methods that may be used to represent the patterning within the set of data and the third, perhaps the most serious, concerns the difficulty of defining a method of validating the results obtained from the clustering process. Full consideration of these problems is given in Everitt (1980) Aldenderfer (1982) and Shennan (1988), while the range of techniques available within the CLUSTAN package have been described by Wishart (1987). Ward's method of hierarchical clustering was selected as the most appropriate technique for exploring the data.

Ward's method of clustering is designed to define clusters that are as homogeneous as possible. Homogeneity is defined

> 'in terms of the distance of the members of a cluster from the mean of that cluster' (Shennan 1988:217).

New members are added to a cluster in such a way as to minimise the 'error sum of squares', this being the total sum of squared deviations of all points from the mean of the cluster (Everitt 1980:31, Shennan 1988:217 - 220). Ward's method tends towards the identification of relatively dense, discrete clusters of points (Aldenderfer 1982:63). The visual representation of the results of any form of cluster analysis is a dendrogram. In the case of Ward's method the most similar samples are the first to be joined and the least similar the last.

Cluster analysis, in common with many statistical techniques applied to archaeological data, can only be regarded as a heuristic device, able to guide the archaeologist towards potential solutions to the problems that he/she has defined. It cannot, itself, produce explanations, or even, in most cases, unambiguous statements relating to a set of data (Aldenderfer 1982, Shennan 1988:193, Gillings 1989). It is particularly important to note that the CLUSTAN programme, once provided with a set of data, will construct a similarity matrix and dendrogram, limited only by the physical constraints of the hardware and software. The degree of similarity between samples is indicated by the fusion coefficient which rises as the similarity decreases.

Because of the impossibility of defining archaeologically significant groups statistically, it is essential that, at some stage, archaeological criteria are employed in the interpretation of the results. This requirement generates two possible approaches to the data.

The first can be described as a 'blind' approach. This has been described, somewhat unfavourably, by Waterbolk and Butler as:

> 'beginning by ignoring all archaeological groupings of the analyses, and throwing them all into one pot, with the hope that mathematical means will bring them out of the pot again in a logical order' (1965:230).

In the present context this requires the writing of an appropriate CLUSTAN programme and the interpretation of the resulting dendrogram in accordance with archaeological criteria.

The second approach is to define groups according to criteria independant of the factors under investigation and then to analyse these pre-defined groups statistically so as to detect anomalies.

Both approaches have their strengths and drawbacks. The first can lead to the kinds of problems with which Waterbolk and Butler dealt in the case of metallurgical analysis. In this example (Waterbolk and Butler 1965) a lack of consideration of the archaeological context, combined with the inevitable inconsistencies in the material and the statistical processes involved, led to the creation of statistically similar groups which took no account of the entities (archaeological assemblages) being analysed. The results produced required such fundamental changes to the understanding of the archaeological record, that they were widely seen as unacceptable. The problems with the second approach are precisely the opposite. If groupings based on archaeological criteria are taken as given then there is a danger that unsupported assumptions and hidden biases will prejudice the procedure so that the statistical tests serve only to support the prejudgements of the observer. Even if these are rigorously examined there is still a danger that the nature of the statistical tests applied will preferentially favour the hypotheses advanced and that alternatives will be obscured.

All of these problems arose in the course of the analysis of the data from the thin sections. The initial series of statistical tests of the results of the point counting were based on first approach outlined above. The only strictly archaeological input into the process was the use of the site as a basic unit of analysis. A subsequent series of tests, based on the second principle, took the typologically defined groups as the starting point for a statistical analysis (described in sections 5.7.7 and 5.7.8)

5.7.4 Cluster analysis.

The first diagrams to be produced were based upon individual sites. These served primarily to confirm the patterns of association seen in the scatter plots produced by SCATTER_GINO. They were of

little long term analytical value as there was no way of comparing or seeking associations between the discrete groups identified as existing on different sites. Their value was in demonstrating a general conformity with the results of the scatter plots which suggested that there were patterns in the data that were worth pursuing and that the method of analysis was appropriate.

The second stage involved the comparison of sites from the same and different geographical areas. A considerable number of dendrograms were produced involving different combinations of the same sites. These combinations were based primarily on groups of sites selected on the basis of their geographical proximity and their location in geographically discrete areas. A number of regular associations emerged and, conversely, samples from a number of sites, when compared, proved to be radically different to one another (notably Manching and Stradonice).

Ultimately the attempt to produce a synthesis of the information from the whole area, on the basis of a large number of small dendrograms, failed because of the complexity of the data and the impossibility of drawing sound conclusions based upon it.

The third stage took the form of a single programme incorporating 318 samples from 59 sites. The details of the programme are given in appendix 4. Initially this programme failed to run, the reasons being twofold. The first was the size of the similarity matrix produced which exceeded the available capacity of the XEDIT editor on the IBM 3083. A more fundamental problem was that the dissimilarity between the more extreme cases produced a matrix with values that exceeded the storage capacity of the relevant part of the CLUSTAN 3 programme. The programme was thus unable to calculate and store the similarity matrix that was the source of the dendrogram. The only way to avoid this problem was to transform the data statistically so as to reduce the scale of the dissimilarity whilst preserving the qualitative differences between cases. This was done with the CLUSTAN command STANDARDISE (Wishart 1987:181-2).

This procedure having been carried out, it was possible to run the programme and to produce a hard copy of the dendrogram (Figure 5.25). This provided the basis of the following analysis.

Before discussing the details of the final dendrogram it is important to set out exactly what the samples are, what they represent and how the information that they contain may be used.

Each sample (or case) represents a certain number of sherds made of that type of fabric found on a given site. A cluster (at some level which cannot be defined in advance) consists of a number of samples from one or more sites all of which share enough common characteristics for them to be considered as

being made of the same fabric. The composition of such a cluster will indicate the distribution of that particular fabric type. Knowing the relative importance of each fabric type on each site, (expressed as a percentage of the total) it is possible to identify sites or areas where a given fabric type predominates. Two problems beset the interpretation of the data in these terms. The first is the impossibility of defining statistically the level at which samples share enough characteristics in common to be considered the same. The inevitable extension of this is the question of deciding which clusters have an archaeological significance, or, in other words, the extent and nature of the distribution of each fabric type.

The second problem is that in the absence of distinctive geological traits it is impossible to identify the source of a type of clay with any degree of certainty. The simple presence of a high percentage of a given fabric on a certain site or in a certain area may be considered as a strong indicator of a local origin, but other explanations (such as the bulk transport of clay or of finished vessels) cannot be discounted.

An assumption underlying the analysis is that within those clusters with the fewest members and the smallest fusion coefficients differences are due largely to chance factors, and originate from the nature of the fabric and the process of point counting. Moving up the diagram (ie from low to high fusion coefficients) the larger groups become less similar to each other and it is assumed that non-random factors play a larger part, and that some patterning related to the archaeological situation will be involved. As noted above it is impossible to define by any statistical means the level at which chance factors will be replaced by factors with an archaeological significance. The obvious extension of this is that an element of uncertainty will persist throughout the results and a certain number of archaeologically anomalous results must be considered inevitable.

5.7.5 Description and analysis of the dendrogram.

An initial observation on the dendrogram relates to the relationship between some of the fabric groups originally distinguished by eye. Given that a principle of 'splitting' rather than 'lumping' was followed when examining the pottery, it was to be expected that some of the fabric groups initially distinguished are, in practice, very similar to each other. Examples in the dendrogram are numerous, but include Liptovská Mara 20, 90, 30 and perhaps 60, Bratislava 1, 2 and 4, Esztergom 12 and 12A, Bekasmegyer 2 and 10, 13 and 14, and Tabán 4A and 14A. Some of these groups were also visible in the

single site dendrograms. Such associations are also visible in those dendrograms drawn for discrete geographical areas, notably the Danube plain which were briefly referred to in the previous section.

The dendrogram is divided into two principle parts, each with different internal characteristics. The upper section (Mogila 1A - Manching 13) is, compared with the lower, homogeneous in its structure. The maximum fusion coefficient (which for the sake of this discussion can be taken as an index of similarity, and thus as a useful means of comparison within the dendrogram) is less than 24, low in relation to that between the two principle groups (120.945). The lower group (Mogiła 3 - Stradonice 11) is far less homogeneous with a number of groups fusing with each other at coefficients of between 0 and 60, indicating a greater degree of difference within the group. The groups are identified on the dendrogram, according to the terminology used below.

The physical constraints on the tangible output from the CLUSTAN programme have caused the compression of the dendrogram to a scale at which it is difficult to distinguish variations within the second level clusters. For this reason the data was split into these groups and each one subjected to the same CLUSTAN programme as the total body of the data, though without the necessity to use the STANDARDISE command. The resulting 13 dendrograms are reproduced as Figures 5.26 - 5.37). In Table 5.4 details of each group are given together with the samples of which it is composed, the percentage of each site assemblage represented and the occurrence of typologically distinctive traits. This data will be evaluated in the next section.

5.7.6 Interpretation.

In this section I shall present a preliminary interpretation of the information provided by the dendrograms described above. This will be related to the archaeological situation as outlined in chapter 2, but will not, as yet, include the contribution made by a study of the typological aspects of the pottery. This will be considered in the following section.

As explained above, the samples do not represent equal parts of the total site assemblage, but rather vary greatly in the numbers of sherds which they represent (see Table 5.6). For each cluster therefore it is possible to determine the relative importance of material from different sites. A cluster including, for example, samples representing large quantities of material from Polish sites is deemed to be more particularly associated with that area than with another, samples from which might represent

only a handful of sherds. Using this principle Table 5.7 summarises the main areas of distribution for the groups defined in the dendrogram and in Table 5.6.

In group 1 the presence in subgroup 1C of a concentration of material from sites across the study area supports the decision made to split the group into four subgroups.

Group 2G is a small group in terms of the numbers of sherds involved, but the relatively high numbers at Třísov, together with the presence of four sherds from Manching suggest that it might be an extension of a group more common outside the study area (perhaps in Bavaria). The same might be true for group 2C which consists of only three sherds, one from a ritual context (Prosné) and another from the inside of a kiln (Liptovská Mara 91).

Though links do exist between the eastern and the western parts of the study area, there is a definite tendency towards separation and the existence of relatively discrete groups of material. None however are wholly discrete, as Table 5.8 shows. At whatever level one reads the dendrograms the distribution of similar fabrics implies contacts between widely separated sites and areas. The overall impression, leaving aside specific cases, is of areas of circulation with varying degrees of interaction outside these areas. Examples of such patterns include Group 1A which represents a principal axis of contact between the Polish and Danube plain sites, but with secondary contacts with Bohemian sites, notably Trísov and Lovosice. The intensity of contact is greater than that found in the otherwise similarly distributed groups 1B and 1D. Group 2F is found most commonly in Central and Southern Bohemia (notably at Stradonice, Třísov and Nevězice), but is also widely distributed on sites with small amounts of slip decorated pottery in the western and northwestern parts of Slovakia.

The greatest number of groups are found based on the Danube plain and Poland - no less than eight fabric groups have their principal representation in these areas. The pottery from Bohemia and Moravia, in contrast, is composed of only four fabric groups (2A, 2F, 2G, 2H), two of which (2A and 2G) have significant Eastern components.

Generally speaking, the material found on sites distant from the 'home' site forms only a small proportion of a given fabric group, less than 2% of the total assemblage on that 'home' site, though the significance of the material from the minor sites is more difficult to assess. Only in the cases given in Table 5.9 do the proportions rise.

As I described in chapter 4, the assemblages from Vyšný Kubín and Nitriansky Hrádok are very small and percentages based upon them tend to overemphasise their importance. Of greater significance

is the presence of material from Tŕísov in groups 1A, 2E and 2H. The site lies close to the southern Bohemian source of graphite rich clay and it has been suggested that it plays a role in the production and circulation of Graphittonkeramik vessels, or, alternatively in the clay from which they are made. The suggestion here is that the presence at Tŕísov of fabric types originating in other areas is linked to the role of the site in these long distance exchange networks. Other sites, though they are less obviously the source of important products or raw materials are likewise involved in such contacts, though perhaps on a less regular basis. This applies particularly to sites such as Lovosice, Stradonice and Vyšný Kubín, all of which lie on important trade routes.

5.7.7 Petrology and typology.

The principal problem involved in the interpretation of this dendrogram lies in its incompatibility with the other sources of information, particularly the typological analysis.

Although those fabric groups which include sherds with particular decorative traits appear in clusters together with samples found on sites some distance away, the particular decorative traits involved are not found on both groups of sites. An example might make this clearer. In group 1C1 the sherds from Krzeslawice include chalice rimmed jars, a peculiarly Polish and Slovak form. The group also includes sherds from Stradonice with incised wavy lines. Although apparently made of the same fabric the two styles of vessel are never found in each others 'style zones'. This problem affects groups 1C, 2A (Moravian inturned rim bowls, red wavy bands, chalice rimmed jar and miniature storage jar) and 2D (Incised wavy line, wax resist decoration and red wavy bands), 1A (red wavy bands, chalice rimmed vessels and miniature storage jars), 1D (red wavy band and chalice rimmed jar), 2E (red wavy band and chalice rimmed jar), 2I (chalice rimmed jar, red wavy band and incised wavy line). Even if the clusters are further subdivided the problem remains. The two sources of information are in conflict. The petrology suggests that fabric groups are widely distributed across the study area, contacts between certain areas being of particular importance and with a degree of overlap which indicates circulation of the vessels even outside these principal areas. In contrast the typology suggests the existence of relatively discrete regional groups.

Inevitably some sampling and statistical errors will lead to a degree of 'blurring' of the areas of circulation and could lead to certain of these 'misplacements' of typologically distinctive sherds.

There are two reasons to reject statistical problems as a general explanation. The first is the number of groups affected by the problem and the second, related to this, is the fact that if the typological factors are ignored the picture presented by the dendrograms can be interpreted as being consistent both internally and with respect to the information derived from other aspects of the archaeological record including the distribution of slip decorated pottery on individual sites. Secondly both typological and petrological information do agree insofar as they both identify differences between the characteristics of the assemblages in the various regions. Rather than one of the methods proving the other wrong or inadequate, it seems more likely that they are referring to different aspects of the pottery, though it is difficult to see precisely what these different aspects could be.

It must be acknowledged that the technique of thin sectioning used in this study was not perhaps the most suitable for the type of clay body involved. Given the fine grained texture of the fabrics and the absence of distinctive mineral inclusions, a more appropriate petrological technique would have involved study of the morphological characteristics of the mineral grains using image analysis. This would have allowed a more detailed characterisation of individual fabric types than was possible from simple observation alone. A second alternative would have been to have used a different method of characterisation entirely. This would have involved the use of a technique such as neutron activation analysis, based upon the quantitative analysis of the elements constituting the clay minerals (Evans 1989)

At the time when I began the project neither of these alternatives was a practical option.

These problems should not be allowed to obscure the fact that there is some measure of agreement between the dendrogram and typological and spatial information. Most significantly they all identify differences between the characteristics of distributions within different areas. Bohemia and Moravia are characterised by a pattern of distribution dominated by a small number of central sites (oppida), typological patterns apparently centred on the same sites and relatively few distinct fabric groups. The Danube plain and Małopolska, in contrast, are characterised by a greater number of central sites with large assemblages, typological groups reflecting the two geographically distinct regions and a large number of fabric groups. Northern and eastern Slovakia appear to be organised around central sites, in a way superficially similar to that seen in Bohemia and Moravia, though they differ in being affected by the apparently high degree of interaction (as indicated by the petrological analysis) between Małopolska and the Danube, and by the greater degree of regional interaction (as indicated by the distribution of typologically similar vessels).

5.7.8 Cluster diagrams based upon typologically defined groups.

In section 5.7.3 I outlined two approaches to the statistical analysis of archaeological data. Having described the results of applying the first, in this section I shall describe the results of the second, which takes as its starting point groups of cases defined according to archaeological, and in this case typological, criteria.

The typological analysis of the pottery suggested that there were five principal zones within the study area, defined by distinctive decorative motifs (groups T1 - T4, summarised in Table 5.10, together with southern Bohemia, which is defined more by the absence of distinctive traits than by their presence). There seems to be a certain amount of interaction between these areas, indicated by the small numbers of vessels occurring outside their 'home' areas. The question to be tackled in this section is the extent to which petrological analysis supports this picture of geographically circumscribed areas of circulation.

Group T1.

In the case of group T1 (Figure 5.38) the relatively even distribution of samples associated with typologically distinctive traits throughout the dendrogram gives an impression of internal homogeneity somewhat at variance with the high fusion coefficients between the different groups making up the dendrogram. The principle problem is the presence of the very distinctive group of material from Stradonice (group 3) which is not only petrologically quite unlike the remainder of this particular typological group but also appears to have little in common with any other group. The fact that this anomalous group occurs only at Stradonice suggests that it is likely to be either the result of the use of a different type of clay (from a different source or the result of a different type of processing) or that it originates outside the study area. The former explanation is supported by the fact that three of the samples represent vessels with incised wavy lines and, in one case, wax resist decoration.

Apart from this group only one other, 2B, has characteristics which suggest that it can be distinguished from the remainder. In this case the distinction is primarily typological; statistically it is a subdivision of group 2. With the exception of Stradonice 2 it consists of sherds drawn from very small and poorly understood assemblages (Závist and Lovosice), and its existence may be the result of chance factors. Vessels with incised wavy lines have certainly been found at Lovosice (Salač pers. comm.) and only a small part of the assemblage from Závist has been published. The possibility that the group represents material from an alternative source must be acknowledged, (Holodňák (1987) has indicated that analyses of sherds from sites in northwestern Bohemia point to sources other than Stradonice and

probably from outside Bohemia) but the position of the group in the dendrogram, as compared to that of group 3, is not strongly supportive of a distant origin.

With the exception of these two groups of material the remainder show no indications of significant differences, either typological or petrological. The subdivision of groups 1 and 2 is not unexpected given the apparent chronological span represented by this material (late La Tène C2 - late La Tène D2). It is to be expected that over such a time period there would be variations in the composition of the clay used and consequently in its petrological characteristics.

The sherd from Třísov which seems to belong to this typological group fits into the main group without any significant problems.

While the vessels from the sites around Kolín appear to be linked with those from central and northwestern Bohemia (on the evidence of the vessel from Polepy), those from the oppidum of České Lhotice pose some problems. Typologically the material found to date consists only of red and white banded and brown-red and unpainted sherds. Figure 5.39 shows the results of the inclusion of the three samples with those from central and northwestern Bohemia. There appear to be no significant problems in the accommodation of this material within the dendrogram, the maximum fusion coefficient increasing by only 114.252, compared with Figure 5.38. Although this is not conclusive, it does suggest that the vessels from České Lhotice are of a similar clay type to those from other sites in central and northern Bohemia. With regard to its geographical position, its position on the Chrudimka river, a tributary of the Labe, suggests that the site is likely to have had closer contacts with central and northwestern Bohemia than with the south.

<u>Group T2.</u>

This group consists primarily of samples from Moravian sites, defined by the occurrence of the distinctive inturned rim bowls. The only example of such a vessel positively identified outside Moravia (Závist 4) was also included.

The fusion coefficients seen in the dendrogram of group T2 (Figure 5.40) indicate a group without the extreme differences between the two principal groups seen in T1, but with internal differences that are actually greater. The dendrogram divides into four primary groups, two of which (groups 3 and 4) include all but one of the samples representing the inturned rim bowls. The one exception is Staré Hradisko 8 (1.22% of the total assemblage), which is in the first group. The third group includes over 70 % of the total assemblage from Staré Hradisko (all but two of the samples represent inturned rim bowls)

and four of the minor sites. The fourth group includes only two samples from Staré Hradisko representing inturned rim bowls together with Závist 4. The latter, together with the sample from Křenovice, forms part of an outlying pair on the edge of the group. The composition of group T2 suggests that there is a core group of typologically and petrologically similar vessels (group 3), which probably originate from Staré Hradisko, with the group 4 petrologically different but typologically related to it. The first and second groups share little in common with the third and fourth and include less than 10 % of the total assemblage from Staré Hradisko.

Plotting the distribution of the members of these groups in relation to Staré Hradisko and to the principal rivers of Moravia (with which the distribution of settlement is closely associated) suggests that groups 1 and 2 are found principally in the valley of the Dyje and its tributaries (notably the Svitava) and group 3 with the Morava and Valová and with Staré Hradisko itself (Figure 2.6). The fourth group has no particular geographical association, and in any case includes Závist 4, suggesting either an origin outside the area or a generally wider and less circumscribed distribution. The implication is that two or three centres of production are involved together with associated circulation networks.

<u>Group T3.</u>

The material from the sites on the Danube plain forms three principal clusters with the typologically diagnostic sherds relatively evenly distributed throughout them (Figure 5.41). The groups (with one possible exception, which will be discussed below) are characterised by a mixture of samples from different sites, a pattern which bears out the suggestion, made in section 5.6, of regular and frequent contact between sites joined by the Danube and its tributaries.

Two sherds from the Danube area show strong typological similarities with the vessels from northern Slovakia and Poland. One of these was thin sectioned separately (the miniature storage jar from Gellérthegy) and the other, a chalice rimmed jar from Esztergom appeared to be made of a standard type of Esztergom fabric (7B, which constitutes 3.6% of the total assemblage). This latter poses some problems in that the same fabric also occurs bearing red wavy bands. In retrospect it is clear that the chalice rimmed sherd should have been sampled and a separate thin section made, but the fact that this was not done points to the very close similarity which it has with other examples of the same fabric. One explanation for this is that the vessel is a local copy of an original from the north, now lost. Technically there is no reason why such copying could not have taken place as the production techniques employed in the two areas are almost identical, and the only restrictions on copying would have been social. Given

the homogeneity of material culture in the Late La Tène, and the apparently close links between the Danube and the areas to the north, such sanctions seem unlikely to have been particularly strong.

The miniature storage jar from Gellérthegy occurs in sub-group 2B, which it would be possible, on this basis, and in the absence of other typologically distinctive sherds, to interpret as representing a group of vessels of exotic origin. In the final analysis however, the position of the sub-group, within the larger group 2, and its relatively heterogeneous character (compared, for instance, to 2C) do not make this a convincing interpretation.

Group T4.

Group T4, defined typologically, is limited in spatial extent to northern and eastern Slovakia and Poland, with two outliers on the Danube, the chalice rimmed vessel from Esztergom and the miniature storage jar from Gellérthegy described above. A number of dendrograms were plotted for this data (Figures 5.42 - 5.45), omitting and including the sherds from the Danube and those sites in Poland and northern Slovakia (in practice Púchov culture sites) which have not produced sherds of the typologically distinctive type.

Figures 5.43 and 5.44 illustrate the position when only those sites from which samples of the typologically distinctive sherds were taken are clustered, and which omit the samples from Esztergom and Gellérthegy (Figure 5.44) and include it (Figure 5.43). In each case two groups are formed, differing in size and composition, but similar in that in both cases the larger group includes the majority of typologically distinctive samples.

In Figure 5.43, which includes Esztergom 7B and the miniature storage jar (M.S.J.) from Gellérthegy, typologically distinctive samples are concentrated in one group, also the most internally homogeneous, with only two, both from Zemplín, in the second. This second group is dominated by material from Zemplín and from the Liptov basin, which suggests a link between the two areas which is independant of the link between Slovakia and Poland. The Hungarian samples both fall into the first group which is primarily composed of samples from Zemplín and Poland, with only small amounts of material from the Liptov basin. It is possible to interpret this dendrogram as indicating separate workshops in Poland and in the Liptov basin (which in effect means Liptovská Mara), both of which had connections with Zemplín. The problem with this interpretation lies with the quantities of material found at Zemplín itself, which seem much more likely to have been the result of the local production of pottery than of its import. An alternative explanation rests on the identification of two subgroups within the

second group, fusing between 1041 and 1500. One of these (group 2A) consists primarily of material from Liptovská Mara (42.82% of the total assemblage) with only three samples from Zemplín (30.45% of the total assemblage), while the other (group 2B) consists primarily of material from Zemplín (44.0% of the total assemblage) with only 23.17% from the Liptov basin (Liptovská Mara and Kvačany B). In this connection it is interesting to note the presence in this group of samples 90 and 91 from Liptovská Mara which were found in the filling of the kiln in site 7. This interpretation of the dendrogram suggests the existence separate workshops at Liptovská Mara and Zemplín, with the first group representing a third, probably in Poland, in which the chalice rimmed vessels and miniature storage jars were produced. The existence of examples of the former in the 'Zemplín' and 'Liptovská Mara' groups may be the result of the copying of exotic designs in the way suggested above in connection with the vessel from Esztergom.

In the description of group T3 above I referred to the potential for confusion regarding the fabric of the chalice rimmed sherd from Esztergom. Figure 5.43 includes both this sample and the miniature storage jar from Gellérthegy, but to examine their possible effect upon the dendrogram as a whole they were omitted from Figure 5.44. The effect of this is to reduce group 2 in size and to blur the distinction between the two subgroups. In the first group certain subgroups become more distinctive, both with reference to the fusion coefficients and to the composition of the groups. Group 1A consists primarily of material from Poland and Zemplín and 1B of material from Poland. 1C is more mixed, and is dominated by samples from Zemplín, together with others from both the Liptov basin and Poland. The second group is dominated by samples from Liptovská Mara and Zemplín. It is quite possible to interpret such a pattern in a similar way to that proposed for Figure 5.43.

In order to take this analysis a stage further, another set of dendrograms was plotted which included the samples from other sites in the area under consideration, including Pleszów, from where a miniature storage jar rim is recorded, though which was not available to be sampled (Figure 5.23.1:4). Figures 5.42 and 5.45, including and omitting the samples of the miniature storage jar from Gellérthegy and Esztergom 7B respectively, differed in a number of respects, but were similar in that they both reproduced the split seen in Figures 5.43 and 5.44 between a group which includes the majority of typologically distinctive samples and a group including only one or two. Looking more closely at these dendrograms, certain other significant features stand out. In Figure 5.42 (including Gellérthegy and Esztergom 7B), the first group, which includes the bulk of the typologically distinctive samples, is dominated by Polish material. The second group, though it contains a significant number of samples

from Polish sites, also includes the bulk of the samples from northern and eastern Slovakia. Such a pattern serves to support the suggestion made above, that the chalice rimmed vessels and miniature storage jars were produced in Poland and reached other sites through exchange networks. The subdivision of the second group also supports the suggestion, made above, of a division between vessels originating from the Liptov basin and Zemplín, though in the case of the latter (group 2a) there is also a notable presence of Polish material.

In the case of Figure 5.45, which excludes the samples from Gellérthegy and Esztergom 7B, the internal organisation of the dendrogram is somewhat different to that in Figure 5.42, but a similar interpretation can be sustained. The first group, composed principally of Polish samples, contains a majority of the typologically distinctive sherds, followed by the second, in which Slovak material plays a greater part. The third group is again dominated by samples from the Liptov basin and neighbouring areas.

Two cases should be noted. Liptovská Mara 91 and Prosne, both representing single sherds, regularly occur on their own. The sherd from Prosne comes from a ritual context and that from Liptovská Mara, from a kiln, though the nature of the latter association is unclear. Neither of the sherds fits easily into the dendrograms and, though the possibility of some statistical irregularity must not be discounted, it can be suggested that they, together perhaps with Stradonice 21, originate from some source outside the study area.

Trísov and Southern Bohemia.

The slip decorated pottery from southern Bohemia does not appear to have any distinctive typological traits to link it with sites to the north or east. The material from Třísov is, in general, more fragmentary than the assemblages from either Stradonice or Staré Hradisko and includes fewer rim sherds or profiles to aid in the definition of locally characteristic traits. Sherds from the minor sites (including Nevězice) are likewise fragmentary and undiagnostic, providing no basis upon which to build a typological scheme. Based upon an analogy with northern and central Bohemia and with Moravia, and treating southern Bohemia as a discrete unit, a dendrogram was plotted for Třísov, Nevězice and the sites in the Strakonice basin and the surrounding hills (Figure 5.46). Lacking an independant means of verifying this dendrogram it is difficult to be certain of its significance, but a number of suggestions can be made. In terms of the geographical distribution of the sites, groups 1 and 2 include Nevězice and the

sites in the Strakonice basin. The third group includes Kašperske Hory, Skaly and Sedlo, all of which lie to the west and south of the basin and of Třísov. Samples from Třísov occur throughout the dendrogram, group 1 including 26.12 of the assemblage, group 2, 15.32% and group 3, 55.55%. The possibility of slip decorated pottery production at Nevězice should not be overlooked. As outlined in chapter 2, excavations on the site to data have been small and aimed principally at the ramparts and gateways. The sherds sampled came from the first series of excavations and further sherds have been recovered from more recent excavations (Drda 1987). The possibility that group 1 represents material produced at Nevězice should not be overlooked. This would imply that slip decorated pottery was reaching Lažiste from both Nevězice and Třísov, or from another source entirely.

Manching.

It was not possible in the time available to examine more than a selection of slip decorated pottery from Manching, and the chief aim was to obtain samples from a range of chronological contexts for broad comparison with that from the study area. Study of material from the most recent excavations (Maier 1985, 1986) has suggested that there are three groups, distinguished by the appearance of the fabric and the character of the surface which are related to the chronological sequence (Geilenbrugge pers. comm.). The samples taken for thin section analysis break down as follows:

La Tène C2 - early D1.

1, 2, 3, 4, 5, 6

La Tène D1

8, (?)7

La Tène D1 - D2

7, 10, 10A, 11, 12, 13, 5351B, (?)9

The dendrogram based on these samples is reproduced as Figure 5.47. Two principal groups can be distinguished, each with some degree of internal differentiation. The first (1, 3, 11, 10) is less clearly associated with samples 4 and 10A, while the second divides into two clear subgroups (2, 9, 5, 8 and 6, 12, 5351B, 13). There is little correspondence between the two schemes. It is impossible, given the number of samples collected, to suggest that the scheme based on macroscopic examination is 'wrong' in any absolute sense, but there does seem to be a case for a programme of physico-chemical analysis to provide a check on the visual classification of the material.

Typologically there are similarities between vessels illustrated by Maier (1970) and those from Bohemia, and particularly from Stradonice. Examples include the bowls shown in Table 39:783, 40:792 (with an incised wavy line) and 793, some of the S profiled bowls (Table 41) and the vessels decorated with spots, apparently formed using a wax-resist technique (Table 85:1200, 1201, 1202, 1207) similar to that which I have described in the case of the sherds from Stradonice and Závist. In the absence of analyses of the materials from which these vessels were made it is impossible to decide the extent to which the similarities are the result of exchange between the two sites, of the copying of designs or of the sharing of common conceptions of the 'correct' shapes or decorations for slip decorated vessels. In some cases, such as that of the bowl with the incised wavy line, the fact that only a single vessel is present at Manching suggests that it is not in fact a local form, and may, like the Polish forms found on the sites in the Danube Plain, be of 'foreign' origin. The same may be true of other vessels including those decorated with the wax-resist spots. In other cases, such as the S profiled bowls and tall 'vase' forms, the shapes are less definitive and further analysis is required before reliable conclusions can be drawn. The samples taken from Manching, and discussed above, were not from sherds possessing diagnostic traits, and consequently, to have included them in the various dendrograms would have involved major problems of interpretation.

5.8 Conclusions.

The results of the analyses described above can be summarised as a series of points.

1) A distinction can be drawn between the patterns of distribution in the western and eastern parts of the study area. In Bohemia and Moravia the evidence points to a pre-eminent role for certain of the oppida. Stradonice and Staré Hradisko dominate central Bohemia and central Moravia respectively, both in terms of the quantities of material and in the concentration of typologically distinctive sherds. Petrological analysis of the samples from these regions (Groups T1 and T2), can be seen as supporting this interpretation, and adding greater detail to it. In the case of Moravia this takes the form of distinction between a fabric group which includes the majority of the 'Moravian style' inturned rim bowls, centred on Staré Hradisko and the Morava drainage basin, and one in which this style of vessel is virtually absent, centred on the Dyje and Svitava valleys. Typologically the assemblages from Třísov and other sites in southern Bohemia have no individually distinctive characteristics, though the distribution of the pottery

closely resembles that from Stradonice and Staré Hradisko. This assumption can be seen as being borne out by the petrological analysis, which shows no unusual features.

In southwestern Slovakia and Transdanubian Hungary the distribution of sherds decorated with red wavy lines is wide, and, though various clusters can be distinguished petrologically these are not so different as to suggest the presence of material from outside the immediate area. The most plausible explanation would seem to be that the sites were in regular contact, via the Danube, and that the movement of goods took place on a relatively frequent basis. It seems that contacts were also maintained with the northern half of Slovakia and with Małopolska. Judging by the typological evidence this interaction was on a relatively small scale.

Within northern Slovakia itself the circulation of slip decorated pottery seems also to have been extensive. Typology and petrology together suggest that vessels were produced in at least three locations, in Małopolska (including the chalice rimmed vessels and miniature storage jars), in the Liptov basin in northern Slovakia and at or near Zemplín. Interaction between these three locations seems to have been relatively intense, in spite of the very different nature of the Polish settlements. There is no evidence, in this data, of distinctions between the Polish material itself as Woźniak has recently claimed (1989), though it might be possible to interpret the chalice rimmed vessels and miniature storage jars as the products of particular workshops, and to distinguish them from other vessel types. This does not, however, seem to be supported by the petrological data as the samples form two clear groups with Zemplín 2 as an outlier.

2) A number of traits common to the slip decorated pottery assemblages can be distinguished in the central part of the study area, forming a background to other traits which are regionally distinctive. The general distribution is of typologically indistinguishable pottery, bearing red and white bands of varying width. This constitutes by far the largest category of slip decorated pottery, far outweighing the typologically distinctive material, a situation broadly in agreement with the general picture of homogeneity in material culture during the period. Against this background a distinction can be drawn between the central sites and the villages, not only in the scarcity of slip decorated pottery on the latter but also in the nature of the decoration on those sherds which are present. Vessels with grey geometric decoration are, almost without exception, absent from village sized settlements, across the whole of Czechoslovakia and Hungary.

3) The Polish sites are an exception to point 2. Although they have close links with the sites in Northern Slovakia, (and perhaps with areas further afield) in terms of their material culture assemblages, they differ markedly in their form and organisation. In terms of the assemblages of slip decorated pottery, these settlements, villages in conventional terminology, share characteristics with the central sites in the rest of the study area. Vessels with grey geometric decoration are common and in size the assemblages are broadly comparable (given factors such as the areas and contexts excavated) with those from central sites.

4) In one important respect the project did not succeed. It was not possible to characterize fabric groups according to the mineralogical composition of the clay. This was not a problem inherent in the technique; it proved perfectly feasible to identify individual mineral grains although these were very fine and the clay body had most probably been highly processed before the forming of the vessels took place. The problem lay in the fact that, for reasons that are not immediately apparent, the range of minerals identifiable at a magnification of X100 (and also at higher magnifications) was severely restricted in its diversity. The commonest mineral was quartz, followed by micas (biotite and muscovite) and feldspars, which rarely constituted more than 2% of the total. Other minerals were either completely absent or constituted only a half of 1% of the total. As a consequence of this it was possible to describe the samples only in terms of a limited range of minerals and their proportional relationship to each other and to the clay background. Though it was impossible to define possible sources of clay on the basis of such a description, it was possible to differentiate between different fabric groups, and it was this property that was employed throughout the petrological analysis.

Chapter 6

6.1 The spatial dimensions of the production and exchange of goods in the Late Iron Age in Bohemia and Moravia.

In his review of the evidence from Iron Age Europe, Collis (1984b:137-166) has divided the exchange of goods into three categories; external trade, which took place between the societies within La Tène Europe and those outside (principally the Mediterranean), trade on an inter-regional scale, within the oppidum system, and local trade, described as

'the supply of goods from a central market to its surrounding area' (1984b:137).

His description of the latter two categories is one of the few attempts that has been made to present a synthesis of information regarding the circulation of indigenously produced artefacts. The majority of large scale studies, as I have noted in earlier chapters, have concerned themselves almost exclusively with the import of goods from the Mediterranean region, and elaborate hypotheses concerning the nature of Iron Age societies have been erected upon this foundation (Haselgrove 1982, Wells 1984, Nash 1984, Cunliffe 1988). In the context of such work the circulation and exchange of other classes of artefacts, though often referred to in passing, has rarely been accorded any great significance either in terms of the supply of necessary goods, both utilitarian and non-utilitarian, or an area of social action fundamental to the constitution and reproduction of Iron Age society (cf. Barrett 1989:304).

Collis' analysis of the pattern of exchange focuses on the oppida as nodes in exchange networks and his three categories have been devised in accordance with this view and cover the range of spatial possibilities, from trade with the Mediterranean to the local redistribution of imported goods and local products (1984b:149). While it is clear that the oppida could have played a significant role in the circulation and consumption of goods, it is less clear that their role is a nodal one in terms of all categories of goods. Their precise position, both historically and economically, in relation to other types of economic centres, both large (such as Lovosice) and small (such as the industrial villages) is somewhat more problematic than has been acknowledged. In the following discussion I shall focus more closely on the goods themselves and on the observable patterns of distribution rather than on any specific group of sites upon which they have been found. In doing this my intention is to move the discussion away from a simple consideration of the nature of the oppida and towards a more broadly based view of the economic

aspects of Iron Age society. Inevitably this discussion will be constrained by the biases in the excavated and published archaeological record, the extent of which should be clear from the description in chapter two.

Three categories of circulation, based upon the nature of the goods involved, can be distinguished in the Middle and Late La Tène. These are goods which circulate as raw materials, as semi-finished goods and as finished products.

The clearest example of the first category is that of graphite clay (and/or graphite for tempering local clays), and may also include materials such as the clays needed for the coating of the slip decorated pottery. In addition a number of raw materials were moving over short distances, from quarry or mine sites to fabrication sites. These included stone suitable for querns and building materials and possibly metal ores. In many cases it is probable that they were acquired directly by those who ultimately used them, but the existence of a separate group of suppliers should not be ruled out, particularly in cases such as that of the graphite clay where the material was transported over long distances.

The circulation of semi-finished goods is represented by iron ingots (sometimes in the sword-shaped form described as currency bars) and, more rarely, by non-ferrous metal ingots. Due in part perhaps to the inherently transient nature of the goods concerned, this category is poorly represented archaeologically, but there are indications that ingots and currency bars were more common in the Middle La Tène than in the later period. It has been suggested that this reflects a change in the organisation of production and in the types of goods in circulation (Collis 1984b:87). This apparent change has been linked with the foundation of the oppida and an increase in the output of iron (Wells 1984:143, Collis 1984b:87-9). In spite of the lack of semi-finished products in later contexts, this interpretation of the situation does not seem to be in close accord with other evidence from Bohemia where there is no apparent decline in the working of metal on unenclosed settlements.

A further problem has been highlighted by Salač, who has claimed (1990a) that the evidence for an increase in iron production in the Late La Tène is derived from biased data, in that there has been a systematic underestimate of the quantities of iron in use in the later Hallstatt period. How far this picture is applicable outside northwestern Bohemia is, at present, unclear, though the type of evidence cited by Salac is by no means exclusive to his case study area. From the point of view of the production of iron goods there seems to have been some degree of centralisation of smelting, related to the occurrence of ore deposits, while the working of iron took place on a decentralised and local basis throughout the Middle

and Late La Tène periods on a number of types of site, including the oppida. Whether the circulation of semi-finished products really does decline, either in real terms, or as a percentage of the total quantity of iron in circulation is, at present, unproven. The lack of evidence for any significant change other than the disappearance of the ingots suggests that the answer may simply be that changes in social practices led to a decline in the type of deposition responsible for the hoards of ingots and currency bars. There is certainly less emphasis on the deposition of goods within the study area during the Late La Tène, as the ending of the practice of inhumation burial and the almost sterile nature of the *Viereckschanzen* demonstrates. There may also have been a greater use of scrap metal as the quantities in circulation increased cumulatively over time. Similar comments also apply to non-ferrous metals, though as I shall describe below, the working of these metals seems to have been more centralised than that of iron. In such a situation it is not surprising that ingots of non-ferrous metal are extremely rare.

It seems that glass may also have circulated in a semi-finished form, though perhaps over greater distances than those seen in the case of metal. No unequivocal evidence for the manufacture of glass has yet been found within the study area (Venclová 1990:145), and the pieces of unworked glass which have been recovered from Stradonice and Velemszentvid, imply no more than that finished objects were made on these sites. The origin of the raw material remains unknown (Venclová 1990:156).

Given such imprecise data it is almost impossible to attempt to reconstruct the patterns of circulation responsible for the distribution of raw materials amongst those who required them. Whether these goods were exchanged in a way related to that of the finished goods (discussed below) or whether they moved within a separate sphere (in one to which access was restricted to artisans or to some controlling group for example) remains obscure.

The circulation of finished goods was both more common and, in terms of organisation, more complex than that of either raw materials or semi-finished goods. A number of patterns of distribution can be distinguished within the study area, and these can be related to different forms, or modes, of circulation. I have described some of these, in terms of the evidence for the circulation of goods, in chapter 2, and here I shall summarise the general features which characterise these patterns of distribution.

The first can be termed 'modified fall-off from source'. This has been suggested for both quernstones and *Graphittonkeramik* in Bohemia (Waldhauser unpublished, Fröhlich and Waldhauser 1989). Both classes of artefact originate from circumscribed areas, the former from two quarry sites in

northwest and northeast Bohemia, the latter from raw material sources in southern and eastern Bohemia. From north to south and south to north respectively a form of fall-off in the quantities recovered from excavation can be observed (Figure 2.8). In neither case is this fall-off regular. As I have described in section 2.2.5, the distribution of the higher quality querns varies both locally and regionally, certain types of site (villages and oppida respectively) yeilding more querns of higher quality stone than the sites around them. The case of the *Graphittonkeramik* (described, with references, in section 2.2.6) is rather more complex, with an apparent distinction in the quantities of material found on domestic sites between the foreland of the Krušne Hory (including the valley of the Ohře) and the rest of Bohemia. The suggestion in both these cases is that some mechanism other than simple distance-from-source fall-off was responsible for, on one hand the absence of material from certain sites and, on the other, its presence on apparently similar sites close by.

A second type of distribution is represented by the sapropelite bracelets which originated in central Bohemia. These bracelets have been found in cemeteries (and to a lesser extent on settlements) across the whole of Central Europe in the Middle La Tène period, but the distribution is far from even (Rochna 1961: Figure 1). They are found relatively commonly in central and northern Bohemia, with a second cluster in eastern Bohemia. A third cluster occurs in Moravia and a fourth in southwest Slovakia. They are also found in Switzerland, Austria, Hungary and southern Germany, though here they are less densely clustered. This distribution poses an interpretative problem with respect to both contemporary and later material in that funerary assemblages can be seen to represent the results of a wholly different set of actions to those responsible for the formation of domestic or industrial sites. As a result the drawing of comparisons between the two raises a number of procedural and conceptual problems concerning the nature of the funerary display and its relationship to other aspects of the archaeological record (Parker-Pearson 1982, Owoc in prep.). Such problems make any comparison between the patterns of circulation in the Middle La Tène (for which the majority of the assemblages are derived from cemeteries) with those in the Late La Tène difficult, not only in the case of the sapropelite bracelets, but also in that of other goods, such as the copper alloy bracelets (*Höhlbuckelringen*) for which the distributions have also been plotted (Waldhauser 1987:59, unpublished). Discussion of the origin of practices characteristic of the later period remain handicapped by this difference in the nature of the data.

The third pattern of distribution can be termed the 'regional' or 'sub-regional' type. This is commoner than the previous types and is visible in distributions of artefacts which were made from more

generally available raw materials. As the name implies these patterns of distribution can be described as spatially discrete clusters of typologically and/or physico-chemically similar groups of artefacts. As such they may represent a variety of social or economic formations, and an area defined by the occurrence of one type of artefact or trait may be part of one or several others, and may itself contain others.

A number of examples of this type of distribution have been noted in previous chapters. Though the degree of clarity varies the cases are similar in suggesting that both the production and circulation of goods took place at a number of different levels of organisation. At present, in the absence of comprehensive physico-chemical (or even, in many cases, typological) analyses, the patterns of distribution are insufficiently clear for the full complexity of the situation to emerge. There are, in addition, obvious dangers in interpreting typological similarities as unambiguous evidence for the circulation of goods. In spite of this it does seem possible to distinguish some potential modes of circulation, at least as hypothetical constructs, against which to interpret the distribution of the slip decorated pottery. I am not suggesting that these patterns of production and distribution should be regarded as the only ones operating in the area, but rather that they represent particular examples of much more complex and extensive networks of actions and interactions which almost certainly included perishable goods and artefacts and may also have included the circulation of human beings as marriage partners (Collis 1984b:146, cf. Gregory 1982:62-9).

It is particularly difficult at present to identify circulation at a local, intra-community scale, but, on the basis of artefacts recovered from a number of sites, it is clear that the production of a wide variety of goods took place in a local context, with hamlets and villages acting as local foci for dispersed farmsteads (section 2.2.1). Such intra-community or microregional centralisation (encompassing villages and their dependant hamlets) is represented by crafts such as blacksmithing, the production of pottery, and probably of textile manufacture (cf. Marchant 1989) and carpentry, though perishable materials inevitably pose a problem.

The exchange of goods produced in such contexts should not be thought of as simple, even where it involved goods of low value or rank. It is by no means certain that such exchange would have taken place in contexts institutionally divorced from those involving goods from outside the immediate local region, even if the goods in question may not have been immediately commensurate with each other. A second, and perhaps more important point, follows from the discussion of circulation in section 3.5.6, in which the exchange of the utilitarian goods and food was identified as an important, and in some senses

primary, field of discourse, closely involved in the reproduction of social practices and the social formation. Though there is a tendency to identify households and farmsteads as potentially self-sufficient in material terms, this is to overlook the necessity for interaction on a community scale and the role played in this interaction by the exchange of everyday items. The parts played by perishable goods, and particularly food, at this level together with the potential complexity of the inter-relationships involved, may make it impossible to identify the details of the interactions archaeologically, and in the present context it is necessary to subsume a potential variety of coexisting forms of organisation under a single household mode of production. Such a formulation should however be regarded as provisional, and in need of further detailed analysis at the level of the individual communities.

Greater centralisation of production can be seen in the cases of a number of other types of goods. The working of copper alloys took place on a restricted number of settlements which have been defined as industrial villages or non-agrarian production centres (section 2.2.2). The widespread use of copper alloy objects indicates that extensive networks existed through which these objects were exchanged. One result of the typological homogeneity which has made such objects of particular value in the construction of chronological frameworks, is that the extent and form of these exchange networks is obscure, though it does suggest that the makers were in close contact and that copying was rapid and precise.

Slightly more information is available in the case of fine pottery and it seems that there was some similarity in the organisation of production, though there is no suggestion that the two were in any way homologous. Salac (1990b) has used the quantities of fine wares recovered from Lhotka - Lovosice, in relation to those from smaller sites, to support his suggestion that the site was a centre for the production of this type of pottery. In addition, a number of kilns have been found in the area (details are given in appendix 2). It cannot be assumed that all La Tène kilns were used for the production of fine wares, but, as I suggested in chapter 4, their construction and maintenance requires a level of investment which may be to be associated with some type of centralisation. In principal this could have involved utilitarian wares (as Nicholson and Patterson (1985, 1989) have demonstrated ethnographically), although the evidence for the production of such vessels in a household context in the Late La Tène suggests that this was not in fact the case. In spite of the somewhat circumstantial nature of the evidence, I would suggest that the distribution of the kilns, their size and their form, together with the studies of the distribution of pottery (Waldhauser unpublished, Salač 1990b) can be taken as indicating that they were connected with

the centralised production of fine wares. The distribution of kilns shows a pattern similar in outline (though not involving the same individual sites) to that described above for the working of copper alloys, production being located on a restricted number of industrial villages and oppida which presumably served a surrounding area consisting of a number of settlements, themselves primarily concerned with household and community based production.

This form of organisation can be identified as a second mode of production, characterised by the existence of centralised workshops. In the absence of specific studies of, for example, fine pottery, the details of the exchange of goods produced in these workshops remains obscure, but it probably hinges on the fact that the goods involved were of relatively restricted availability. This may suggest that they were involved in a separate mode of exchange. The articulation between the exchange of these goods and that of locally produced goods is unclear. Ethnographic examples, including those cited in chapter 3, indicate that as the goods involved were utilitarian, in the sense of being involved in domestic and everyday contexts, control over either their production, their circulation, or both may have been an important aspect of social power. To whatever extent this was the case, the acquisition of such goods would have involved the participants in a number of types of interactions with individuals from outside their own immediate social group. Again this implies the existence of a mode of exchange, and of symbolic discourse, in some way separate from that associated with locally produced goods.

The production and exchange of the goods so far discussed do not seem to have been connected with the oppida to any more significant degree than they were with industrial villages. Though the evidence is less complete than could be desired, there does not seem to have been any major change in the organisation of either the production or the exchange of these goods associated with the foundation of the oppida or with any of the other changes which occurred during the 2nd century BC. In terms of the production and exchange of the goods described above, the foundation of the oppida seems rather to represent an extension of the existing forms of organisation than the institution of new forms.

This does not appear to have been so in the case of the working of glass or the production of slip decorated pottery. As I have outlined in sections 2.5.3, 2.5.4 and in chapter 4, direct evidence for the production of both types of goods is sparse in the extreme, but their chronology, typology and distribution (supported, in the case of the pottery, by the petrological analyses described in chapter 5) suggest that certain of the oppida were the principle centres of both production and consumption. Stradonice and

Staré Hradisko emerge as the pre-eminent sites in the case of glass, and Třísov may be added to them in the case of the pottery. The role of undefended sites is ambiguous. Venclová has suggested that Mšec 1 and Lovosice may have a more significant role than do other unenclosed industrial sites in the production and consumption of glass, and the petrological analysis has indicated that the slip decorated pottery from a number of sites in western Moravia may have been produced elsewhere than at Staré Hradisko (section 5.7.8). One of the sites upon which sherds of this group have been found is Bořitov which, to judge from the nature of the finds, which include exotic, imported items, seems to have had an unusual status amongst the industrial villages. There would seem to be a possibility that it, (or some equivalent site) was the source of a group of slip decorated vessels. Even allowing for the possible existence of production on these unenclosed sites, the implication is still that slip decorated pottery and glass were amongst the most specialised and centralised branches of production in the Late La Tène period, and that they were particularly associated with certain of the oppida.

There is no technical reason why this centralisation should have occurred. Though both glass and slip decorated pottery require the acquisition of particular raw materials, the working of neither should have posed no particular problems to artisans as skilled as those of the Middle and Late La Tène. Constraints on production are more likely to have been social than technical.

The similarity in the context of the production of both pottery and glass are also reflected in the similar patterns of distribution of the finished products. Distribution maps plotted by Venclová (1990:Maps 7, 8 and 9) and reproduced as Figures 2.7 and 6.1 show concentrations of bracelets and ring beads in northwest and central Bohemia, with a lesser concentration in east-central Bohemia and a scatter of finds following the Vltava and its tributaries southwards. Comparison with the distribution of slip decorated pottery (Figures 5.16 and 5.16.1) shows a degree of broad similarity, at least in the northern half of Bohemia. The difference in the south is most probably related to the fact that glass objects were not manufactured at Třísov, whereas it seems very likely that slip decorated pottery was.

In broad terms the assemblages of glass and of slip decorated pottery from Stradonice and Staré Hradisko are comparable, and reflect the distinction drawn between these two sites and the others in terms of the diversity and quantity of various types of material recovered from them (Collis 1984b:193-7). The implication is of the existence of a hierarchy amongst the oppida, which is somewhat at variance with the normal treatment of them as of virtually equivalent status.

Without comprehensive analyses of the composition of the glass, it is clearly hazardous to make concrete suggestions regarding the organisation of circulation, but the apparent similarity in the contexts of production and of deposition of both glass and slip decorated pottery may indicate some similarity in the forms of circulation of the two types of artefact. This can be suggested as a third mode of circulation or exchange, and one which seems to differ from the two previously described in a number of ways. The first of these is the nature of the artefacts involved, neither of which can be seen as utilitarian in the strict sense of the word. A second difference is in the quantities of material involved which, in comparison to the goods described as being involved in the first two modes of circulation, are small. Details of the numbers of slip decorated vessels found on the various sites are given in appendix 1 and even in the cases of Stradonice, Staré Hradisko and Třísov, these vessels represent only a very small percentage of the total ceramic assemblage from any given site. Glass objects are more numerous, but even so Venclová's catalogue of finds dating to between La Tène B and D includes only 403 items (excluding the collection of 800 items from Stradonice) from the whole of Bohemia (Venclová 1990:257-283). Though Moravia is not included in the catalogue there is nothing in Meduna's survey (1980:118-119) to suggest that the situation here differs in any significant respect. The overall impression is one of a restricted circulation of artefacts monopolised by individuals occupying the three oppida, Stradonice, Staré Hradisko and Třísov.

In terms of the consumption and use of goods the oppida are further distinguished by the presence of goods of Mediterranean origin. As I have described in chapters 1 and 2, the presence of such goods on sites in western Europe has been a major element in explanations concerning the sources of power within these societies. Whatever the merits of such explanations in a western European context, they have little to commend them in Central Europe, the evidence for contact with states around the Mediterranean being limited to a very small number of objects. The majority of these have been found on the oppida, though the precise contexts are obscure, and some at least seen to have been treated simply as raw materials or scrap (Princ 1986:152, Nemeškalová-Jiroudková 1986:270). In view of this, and in spite of the intuitive tendency to link the exotic with the valuable, (normally attempted without any consideration of how such goods would operate with respect to local forms of economic organisation) it seems wise to err on the side of caution when discussing these objects. Whilst noting their presence on oppida, and in particular at Stradonice and Staré Hradisko, new perspectives on these finds are required which will deal in more

detail with the contexts in which they have been found and, given the small numbers present within the study area, will examine the questions raised in broader geographical and temporal perspectives.

In chapter 2 (section 2.6) I referred briefly to the relationship between the distribution of coins and minting debris and that of other goods, and noted that although coinage appears rather earlier than the first oppida, it rapidly becomes intimately associated with them, to the extent that coin types have been used to define the market areas of individual oppida (Collis 1984b:151-2).

Though Collis makes no suggestion that the 'market area' which he has defined for Stradonice is in any general way exclusive of areas outside it, one must ask what the phrase really implies. The distribution of the silver coins contrasts strikingly with that of the slip decorated pottery, (Figure 5.16, Collis 1984b:151-2) and glass ring beads and bracelets (Figures 2.7 and 6.1). Only one of the silver coins is recorded as coming from the Ohre valley, though the area is the location of major concentrations of both slip decorated pottery and glass, both of which can be linked closely with Stradonice as their place of origin. I would suggest that rather than employing an all-embracing (and ideologically loaded) term such as 'market area', it would be preferable to see the distribution of the silver coins as marking the spatial extent of one particular type of circulation with an unknown relationship to others. A further complication, but one which supports this assertion, is introduced by the inclusion of Závist and Hrazany within this 'market area' both sites having been involved in the minting of coins, though the types and their distribution remain unknown.

In the light of comments to be made in the next section, it may be of some significance that the *Viereckschanzen* at Kokrdov, Mšecké Žehrovice, Skřipel and Třebsko all lie within the 40km zone around Stradonice, although given the absence of coins from both the *Viereckschanzen* and from settlements associated with them, this correlation may be purely circumstantial, a caveat supported by the lack of any similar pattern in southern Bohemia or in Moravia.

The circulation of coinage remains an obscure aspect of Middle and Late La Tène society. Nash's suggestion (1987b) that the minting of coins was related to the mobilisation of military potential as the source of social power cannot be dismissed on purely numismatic grounds but as rampant militarism is, in general, an inadequate explanation for many other aspects of the period it must be treated with caution. Further suggestions, including that made by Gosden (1989), that the development of coinage represents an aspect of the move from a clan to a class society will be discussed in more detail in the final section of this chapter.

In this section I have described the production and circulation of goods within the study area in terms of a number of modes of production and circulation. These can be summarised as follows;

1) Household production - the production of goods in a domestic context using locally available raw materials for local consumption. Circulation at a micro-regional level probably through kin-group and/or age/gender based relationships.

2) Workshop production - the production of goods (including copper alloy goods and fine pottery) requiring specialised knowledge in centralised locations. This category includes the exploitation and working of raw materials such as graphite clay, metal ores and stone for the highest quality querns. Circulation was probably organised at a number of different levels through mechanisms which remain obscure but which can be suggested to involve relationships of obligation. It is likely that both production and circulation involved a number of different arrangements and these require further investigation at the empirical level.

3) Centralised workshops - the production of goods (glass and slip decorated pottery) which required specialised knowledge, but which appear to have been restricted (primarily to the oppida) more by social constraints than by technical demands. Circulation of these goods appears to have been controlled to a considerable extent, consumption being primarily located on the oppida.

In this section I have tried to set the slip decorated pottery into a spatial context with reference to the production and circulation of other types of goods. It also has what might be termed a temporal context, in that it appears at a particular time, associated with a number of other changes which, taken together, are definitive of the Late La Tène period. In the next section I shall address these changes and their implications for the interpretation of the role of slip decorated pottery in Late La Tène society.

6.2 The temporal dimensions of the production and exchange of slip decorated pottery.

In the introduction I outlined the chronological aspects of slip decorated pottery production, and concluded that in Bohemia and Moravia it began at the end of La Tène C2 and continued throughout La Tène D1 and D2. The absolute chronology is of less importance to the present study than is the relationship of the pottery to contemporary events.

Between 400 and 200 BC crises in central and northwestern Europe triggered off a period of social and political instability, one manifestation of which was a series of raids and migrations, some of which

affected southern Europe and the Mediterranean seaboard and appear to have had a profound psychological effect upon the inhabitants of those areas. A second manifestation of this instability, and one which perhaps contradicts the impression of militant expansionism gained from the Classical writers, was the abandonment of hillforts (and settlements in the uplands generally) and their replacement by decentralised and dispersed settlement in lowland areas (Collis 1984b:46). These settlements were associated with cemeteries consisting of extended inhumations accompanied by a more or less standardised range of grave goods. In general terms the burials are characterised by an emphasis on the individual, both in terms of the central position of the body within the grave and in the nature of the grave goods themselves. These consisted primarily of items of personal adornment and other goods possessing an intimate relationship with the individual, such as swords and shields. The latter have been linked with the evidence from the literary sources regarding the warlike nature of the society and the importance of warrior status in the social hierarchy. Amongst the pottery, which seems to be a rarer item in the graves, a number of vessels are of the early slip decorated type described in section 4.2.2

The influence of these cemeteries upon the interpretation of Middle La Tène society cannot be understated, and relatively little is known of the contemporary settlements or of wider issues such as the nature of social or economic organisation (Champion and Champion 1986). Collis has summarised the main features of the period as follows

> 'The general picture that emerges of the period is ... (of) ... a contrast between the highland and lowland areas, especially marked ... in Bohemia ... and in the lowland areas an essentially agricultural economy with no sign of centralisation of population and a poorly marked social differentiation' (1984b:46).

During the first part of La Tène C the situation appears to have changed little, but as the period progressed

> 'there ... seems less concern with burial practice. At the end of La Tène C the burial rite is given up everywhere' (Collis 1984b:48).

Analyses of the cemeteries from northwestern Bohemia indicate that the practice of inhumation burial in this area ended shortly after 200 BC, at the end of La Tène C1 (Waldhauser 1987:32-38, Holoďňák 1988), as it does in southern Bohemia (Michálek 1985). A similar date is given by Meduna (1980:150-1) and Čižmář (1975:431-2) for the cemeteries in Moravia. The end of the practice of inhumation burial coincides with the end of the production of sapropelite rings and with the disappearance of iron ingots. While the former may be related directly to the ending of the practice of

inhumation (the majority of rings have been found in graves), the latter seems to reflect a more general tendency away from the deposition of goods, of which both hoarding and burial with grave goods can be considered part. The focus of ritual activity appears to have moved to other contexts, amongst which were the *Viereckschanzen*.

As I have described in section 2.4, these sites are difficult to date within the study area because of the scarcity of stratified finds associated with them. In general however they seem to have been constructed in late La Tène C1 or C2 and, within the study area, to have remained in use into La Tène D1. Their location does not indicate any direct relationship with the cemeteries that preceded them and they are far fewer in number. In chapter 2 I suggested that the establishment of the *Viereckschanzen* and of the oppida was in some way linked, and that this link is reflected primarily in their distribution but also in their general form, both being defined by the enclosure of areas of land. Though there are problems with the chronology of the *Viereckschanzen*, it appears that some of them at least were established before the earliest oppida and that the relationship was consequently not one of dependency between the two. Rather it can be argued that the construction of the oppida and the construction of the *Viereckschanzen* were amongst the results of the same changes which began with the decline and disappearance of the inhumation cemeteries. At one level these changes represent a shift of emphasis from the personal and individual to the anonymous and communal, exemplified by the construction of the *Viereckschanzen* and the elaborate ramparts and gateways of the oppida. The latter in particular would have involved a considerable investment of time and labour, and the frequent rebuildings suggest that construction was not a single action, but was repeated periodically. This aspect is reinforced by the construction of impractical stone cladding on the front of a number of the ramparts and the procurement of the stone (at least in the case of Nevězice) from sources some distance from the site. This is not to argue that the oppida are 'ritual' or 'sacred' sites in the normal senses of the words, but rather to suggest that the focus of activity which may be defined in some senses as ritual (involving repetitive, communal activity, affirmative of group identity), moves from the treatment of the dead to actions more directly within the sphere of the living (cf. Bowden and McOmish 1987:76, Hingley 1990). It may be that the *Viereckschanzen* represent a short lived phase of such activity between the period of inhumation burial and the construction and occupation of the oppida.

An alternative interpretation (requiring a different interpretation of the chronological relationship between the *Viereckschanzen* and the oppida) is to see the construction of the oppida as marking a change

in the focus of settlement back towards the uplands which had been abandoned at the end of La Tène A. That the *Viereckschanzen* lie in the lowland areas adjacent to the reoccupied upland sites, may indicate something about the relationship between the two zones. It is possible that their construction, overlying pre-existing economic centres, may be linked with an attempt to institute a new economic and social order, of which the oppida were one manifestation. Whether this involved the physical movement of population of the lowland settlements to the oppida or simply the establishment of relationships in which the inhabitants of the oppida were the dominant partners is unclear, and will remain so until the relationships between the oppida and the unenclosed settlements become the focus of research.

Whichever of these alternatives is in fact the case (and they may not be mutually exclusive), both imply that within the field of ritual practice there is a move away from a concern with the individual in death towards the communal, though the role of the individual in life remains debatable.

That the production, circulation and consumption of the slip decorated pottery and glass jewellery was associated particularly with the same period and with the oppida might be held to suggest that the elaboration of material culture in these directions, as opposed to those of weapons and metalwork, indicates further changes in social practice. Such changes would seem to indicate a new series of concerns and, on the practical level, changes in the relative statuses of different crafts. The precise role of both types of goods, and particularly of the slip decorated pottery will be discussed below, but they are amongst the most characteristic of the artefacts associated with the inhabitants of the oppida, and consequently their presence upon the unenclosed settlements should be seen as an indication of the link between the populations of the two types of site. The concentrations of slip decorated vessels in northwestern, east central and southern Bohemia suggest that interaction between these lowland areas and the oppida was of particular importance. Such an interaction can, from a materialist standpoint, be seen as evidence of the importance of the acquisition of agricultural goods and raw materials, though the importance to relatively small communities of social integration on a regional scale should not be underestimated. The evidence from Moravia supports such an interpretation, but the indications from the Svitava basin of a separate source of slip decorated pottery serves as a reminder that the oppida were a rapid and relatively short lived phenomenon and one that might not have been the stable form of settlement which modern preconceptions, having defined them as towns, would like them to have been.

In the preceding sections I have tried to set the production and circulation of slip decorated pottery into its wider context. It forms one part of an interrelated series of changes in society and social practice

which are most clearly represented by the foundation of the oppida, but which in fact also involve changes in the social relationships which both constitute, and to some extent may be constituted by, the production and circulation of goods. In the remainder of this section I shall discuss in more detail some of the social relationships in which the pottery might have been involved.

The background to the circulation of slip decorated pottery is the general homogeneity of material culture which is characteristic of the Middle and Late La Tène periods. Although this might have been somewhat overemphasised (typological variations do exist between goods produced at a domestic and local level for example and have been referred to in chapter 2), the differences between goods produced at a more centralised level are extremely subtle and can scarcely be said to constitute major indicators of separate group identities. The relatively minor variations between types of slip decorated pottery, defined in chapter 5, have to be seen in the context of the widespread homogeneity of Late La Tène material culture, which is in itself a problem requiring detailed consideration.

While the slip decorated pottery was in circulation within circumscribed areas (and presumably amongst circumscribed populations), the bulk of it was not so distinctive as to define these populations in with reference to others (cf. Hodder 1979). The principal distinction to be drawn is between slip decorated and non-slip decorated vessels and this distinction, combined with the fact that relatively small amounts of pottery were involved, suggests that its primary role was within other, primarily intra-group, relationships.

That these relationships were, at least partially, related to status is indicated by a number of factors. The nature of the pottery itself (as described in chapter 4), its distribution in relation to other types of goods requiring a similar level of labour input (such as glass) and to the central sites themselves all suggest that it should be considered as being a valuable or high ranking class of artefact. A possible interpretation of its distribution is that the it was used primarily by those higher status groups in society who resided within the oppida and that it only have entered the exchange system as a single component of the material aspect of the relationships between higher and lower status sections of the community.

If this was the case then the absence of grey decoration on vessels from the unenclosed sites may be an indication of some degree of formality in the relationship, the decorated and undecorated varieties being different classes of pottery, to which access was restricted and each of which was used in the appropriate context. Slip decorated pottery was probably not the most important of goods in these

exchanges; the quantities on the smaller sites (particularly in Bohemia and Moravia) do not indicate exchange on either a regular or frequent basis, and as an extension of this it might be concluded that the pottery was only employed in a highly restricted range of interactions.

In regionally specific terms there were significant differences between the situation in the eastern part of the study area and that in the west. As I have described in chapter 5 the situation in the west is one in which the slip decorated pottery was preferentially associated with certain of the oppida (Stradonice, Třísov and Staré Hradisko). Slip decorated pottery rarely left these three sites and when it did so it went only to other oppida and to certain areas outside the immediate hinterland of the oppidum (as defined by the distribution of the *Viereckschanzen* and, in the case of Stradonice, by coins). The areas concerned were those possessing certain natural resources, both mineral and agricultural, and I would suggest that the exchange of the pottery was part of exchange relationships connected with the supply of goods to the inhabitants of the oppida, via social relationships which may not necessarily have involved overt domination and subordination. Areas closer at hand were involved in other types of relationship, represented, as I have mentioned, by the distribution of the *Viereckschanzen* and certain coin types.

The exact form of these relationships remains obscure, but none of the indications points to armed coercion. Though the effect of the oppidum ramparts is one which, to modern eyes, suggests military domination of an area of land, this is in part related to perceptions derived from the example of medieval and post-medieval military practice. The effect of the ramparts of (for example) Stradonice upon the inhabitants of the Krušne Hory foreland might have been very different and conceivably conveyed very little threat at all. It is more likely that the foundation of the oppida was associated with the establishment of new relationships, indivisibly social and economic, which also involved the circulation of slip decorated pottery. Such an interpretation has serious implications for the view of oppida as nodes in exchange networks or as 'solar central places' (Collis 1984b:184). It does not render these types of interpretations wholly invalid, but rather suggests that the form of the economic system should not be interpreted as analogous to an idealised medieval or capitalist form, but should be seen in its own terms. Some kind of central place function for the surrounding area is still conceivable, but this requires empirical examination before suggestions can be made as to its nature. Priorities include the study of locally produced pottery (because of its potential for supplying information regarding the organisation of production and circulation at the local community level) and of the coins, and both require the accumulation of intra-site contextual information. Of particular interest are sites such as Lovosice and

Boritov, which appear to have had some of the functional attributes of oppida without the characteristic form of such sites.

Questions now arise regarding the relationship of these changes to those discussed by Gosden (1989) and described in section 3.4. These will be discussed further in section 6.6.

6.3 The organisation of the production of goods in Slovakia, Poland and Transdanubian Hungary.

In chapter 2 the eastern part of the study area was divided into a number of areas defined according to geographical and archaeological criteria. These areas are the Danube plain, northern Slovakia (the area of the Púchov culture, which actually extends into northern Moravia and southern Poland), Małopolska and eastern Slovakia. In the case of the Danube plain certain subdivisions, based upon the archaeological criteria were noted. Though the nature of these divisions might, at some level, be profitably questioned, they provide a useful framework within which to examine the production and circulation of goods, representing as they do areas with significantly different natural resources, but connected histories.

In terms of the organisation of production a number of parallels can be drawn with the situation in Bohemia and Moravia. Households and farmsteads, represented by the *Gehöftsiedlungen*, were involved in a similar range of productive activities, although precise details are obscure, due largely to the limited excavation of these types of site. On the evidence from the Liptov basin it is clear that the normal range of household crafts were practised, including the manufacture of utilitarian pottery. As I have outlined in chapter 2, the interpretation of the situation in Southern Slovakia and Hungary poses particular problems, for even where excavation has taken place a number of the expected crafts are absent. This is particularly striking in the case of iron working, which is sparse on sites of all types. This is unexpected as it is difficult to envisage a series of major centres such as those on the Danube plain as existing without metal, and particularly iron, working facilities. Part of the problem is again connected with the scale of excavation and it may be of significance that where forges have been found, at Zemplín for example, they were located almost a kilometre from the enclosed site (Benadik 1965:73, Figure 2). Such a degree of settlement dispersal is reflected, in general terms, at other central sites such as Liptovská Mara and Nitra. Few of the excavations at the central sites along the Danube have examined areas so remote from the

central enclosure, and the precise relationship between sites such as Bekasmegyer and Tabán-Gellérthegy or Bratislava and Čataj remain obscure.

In the case of the production of ceramic fine wares the situation is a little clearer. No limits on the availability of raw materials inhibited the production of such pottery on the Danube plain, and the concentration of kilns on the central sites suggests that production was on a substantial scale. The types of pottery produced in the kilns are, strictly speaking, unknown, and to assume that these were all fine wares may be illegitimate, but it seems probable, for the reasons outlined in chapter 4, that a number were associated with workshops producing fine and slip decorated pottery. The existence, in southern Slovakia and Hungary, of kilns and imported raw materials (graphite) on unenclosed sites would seem to suggest the existence of a class of site equivalent to the industrial villages in the west, although their precise size and role is unknown.

The centralisation of production on a regional scale seems to have been affected to some extent by the wide variations in the availability of raw materials. On the Danube plain only Bratislava, Devín and, to a very limited extent, Tabán-Gellérthegy, were involved in non-ferrous metallurgy. In contrast, in the north, close to rich veins of copper ore, production and working were more widespread, apparently occurring on a number of small settlements as well as on central sites such as Liptovská Mara, Púchov and Divinka. The rarity of ingots, as well as the absence of smithing debris from the majority of sites on the Danube plain, may point to the exchange of finished goods rather than of semi- finished raw materials. This interpretation is reinforced by the absence of ingots from contexts where their deposition might be expected, such as the ritual sites at Liptovská Mara and Prosné, and the hoards found in Bratislava. Such an explanation does raise questions regarding the form in which copper and tin reached Bratislava, and I shall refer to the problem in more detail in section 6.4 below.

As I have noted above northern and eastern Slovakia have produced abundant evidence of the production of goods in a variety of contexts. A number of crafts seem to have been common on the majority of settlements, but the only ones for which details are available are metallurgy and pottery. The organisation of these crafts presents a number of features familiar from the situation described as existing in Bohemia and Moravia, notably the division between the production of utilitarian pottery on the smaller sites, and of wheel thrown wares on the central sites, the latter subsequently reaching the smaller sites through exchange. The organisation of iron working also resembles that seen in other areas in that a

division exists between smelting and working, a division which may also exist in the case of non-ferrous metallurgy.

In the absence of obvious central sites, the situation in Poland appears to offer a contrast to that found in other parts of the study area, but I would suggest that as far as questions of the production and circulation of goods is concerned this difference is not as significant as might be supposed. A number of the settlements, including Krzesławice, Podłeze and Wyciąże, can be described as industrial villages and probably had a similar type of relationship with surrounding hamlets and other villages as did their counterparts in Bohemia and Moravia. The chief difference is that a number of them were active in the primary production of iron (Krzesławice and Wyciąże) and in the extraction of salt (Wielicka XI and possibly others). The precise reasons for the absence of central sites are not clear, but the general similarities that exist between Slovakia and Poland, in terms of the organisation of production suggest that where central sites existed their role was primarily social rather than economic. Such changes as accompanied their foundation may represent an extension of existing forms of organisation rather than a fundamental reordering of the relations of production. As with the situation in Bohemia and Moravia, a key to the understanding of the nature of the change which occurs in the Late Iron Age lies in the preceding period, which in the east, as in the west, is relatively poorly known, for reasons which I have outlined in earlier chapters.

In spite of the lack of clarity in the details of the organisation of production, it seems possible to draw a broad distinction between household and workshop modes of production, similar in general terms to that described for Bohemia and Moravia. In Slovakia the workshop mode of production is, at present, associated mainly with the central sites, but the location of a number of kilns together with situation in Poland indicates that this is by no means a necessary association, and the possibility remains that a class of industrial villages exists, so far undetected, in southern Slovakia and Hungary.

With reference to the slip decorated pottery, the context of production in the east resembles that in Bohemia and Moravia in most of its important aspects. The principal differences between the western and eastern parts of the study area emerge in the roles of, and relationships between, the central sites, differences which may be reflected in the different spatial forms taken by these sites. As these are more clearly visible with reference to the circulation of goods I shall describe them in greater detail in the following section.

6.4 The circulation of goods.

The evidence for the circulation of goods within the eastern part of the study area, described in detail in chapter 2 (sections 2.13.6 and 2.16), is summarised in Table 6.1.

In terms of the local and intra-regional circulation of goods it difficult to draw definitive conclusions from information that is generally sparse. The modes of production described in the previous sections can be linked, in general terms, with circulation at the intra- and inter-community level, although such an equation is inevitably superficial. The intra-regional circulation of goods is of considerable importance both at a theoretical level (as outlined in chapter 3) and particularly with regard to the slip decorated pottery, but before discussing it in detail I shall describe exchange at an inter-regional level. I shall deal first with the movement of goods from south to north.

Two components can be isolated in Table 6.1. The first is the exchange of raw materials (which may have included some agricultural produce), to which little detail can be added beyond a basic statement of its existence. The second is the circulation of finished goods, principally jewellery and items of personal adornment, exotic vessels and coins. The principal direction of movement of these goods was from the south to the north and east, from Noricum into both southern Slovakia and Hungary and from there to the northern half of Slovakia and Małopolska.

There seems to have been some change in the items in circulation over time. The earliest coins found in northern Slovakia are of the Bratislava type, together with Bohemian types, but these were replaced during the earlier part of the Late La Tène by the local Velky Bysterec type, which are rarely found outside the Púchov culture region (a significant exception being the two examples from Zemplín). This apparent growth of regionalisation in coin types is also be reflected in the minting of coins in Małopolska (Wirska-Parachoniak 1981, Mikołajczyk 1984, Woźniak nd., Nash 1986) and the appearance of copper alloy coins of the Dunaszekcso type in Hungary (Bíró-Sey 1972, Nash 1987b). On a smaller scale there are also variations within the Velky Bysterec type, variants being associated with a number of central sites, including Liptovská Mara, Divinka and Spišske Podhradie (Kolnikova 1978).

A second change is in the production and circulation of glass. Venclová has identified the Danube plain as a major centre of production during La Tène C1 (1990:143, map 9, reproduced as Figure 2.7) but has noted that this production ended during La Tène C2 and that the overall quantity of glass in circulation appears to have declined. On typological grounds Pieta has suggested that the majority of glass objects found on Púchov culture sites originated in Bohemia.

These changes should perhaps be seen more as changes of emphasis (though with significant implications) rather than of substance as the general pattern, in terms of the types of goods involved, is similar, not only throughout the Late La Tène period, but also into the period of Roman rule in Pannonia, during which there was a marked increase in the quantities of Roman provincial goods entering Slovakia (Kraskovska 1978, Pieta 1982a, Kuzmová and Roth 1988).

Although it is possible that there were direct contacts between northern part of Slovakia and Małopolska and Noricum (the source of a number of the brooches and personal items) it is equally likely that goods of Norican origin reached the north via the sites on the Danube plain, where they are also relatively common.

The nature of the goods moving from north to south is more obscure and it is far from clear whether raw materials, semi-finished or finished goods were involved. Few manufactured goods of demonstrably northern origin have been found on sites in the Danube plain though this may, in part, be a result of the homogeneity of La Tène material culture obscuring the extent of interaction. One obvious suggestion is that, given the raw material wealth of both northern Slovakia and southern Poland, minerals, including both ferrous and non-ferrous metals, formed a substantial part of the goods exchanged. As I have noted above few examples of ingots have been found in the area, and this parallels the situation in Bohemia and Moravia, where the numbers of ingots recovered from later contexts suggests a decline in their numbers without any equivalent decline in the circulation of metal itself; pointing to a change in practices of deposition rather than in the organisation of production. A second problem is the generally slight evidence for the working of metal on central sites on the Danube plain, although, as I have pointed out in the previous section, it is possible that this is, at least in part, a problem of differential recovery.

The exploitation of non-ferrous metals has one important aspect which may indicate a specific form of dependency of the south upon the north. The coinage of the Slovak Iron Age is characteristically of silver. This use of silver coins was widespread across southern Europe (Allen 1980:42, Nash 1987b:58-60), and cannot be linked with any specific raw material availability, but its use in the coinages of southern Slovakia (such as the large Bratislava types) certainly implies access to an abundant source. The Tatra mountains are one obvious source of this silver and the locally distinctive nature of the coin types suggests that the metal was imported in an unworked form.

A second raw material which may have been involved in the north-south exchange is salt. As I have described in section 2.16, the salt deposits in southern Poland were an important resource throughout the prehistoric and historic periods, and a number of the Tyniec group sites were located to exploit them. Though the importance of the exchange of salt is widely assumed (an assumption based on sound analogies with later periods), trade can only be demonstrated when the salt was transported in non-perishable (ceramic) containers. Such containers would have been wholly unsuitable to the terrain in the area concerned and transport in sacks on pack animals is more plausible. Salt was also exploited further east, and the central sites of Solotvina in the Ukraine and Onçesti in Romania both appear to have been located with regard to its exploitation and subsequent transport southwards (Kotigoroshko 1987).

Though some of this evidence is more circumstantial than could be wished, I suggest that the sites on the Danube plain and those in the northern part of Slovakia and Malopolska were bound together by relationships which involved the exchange of raw materials, notably metal and salt, from the north and manufactured goods and certain raw materials, including graphite clay and agricultural products, from the south. The location of the central sites adds weight to this suggestion, as a number occupy locations which are connected to possible trade routes. Vyšný Kubín, for example, overlooks a principal pass through the Tatra mountains, linking northern Slovakia with southern Poland. Liptovská Mara lies at one end of the Liptov basin, at the point where the river Váh leaves the basin, the only practical route around the Nizke Tatry hills. I have described other examples of such locations in chapter 2.

At present the quality of the data precludes any more detailed analysis and it is impossible to go beyond a bare description of the basic elements of what was clearly a very complex exchange system.

Two additional elements have been mentioned in passing and need to be restated. The first is the potential role played by the Alpine area, which offered an alternative source of many of the goods which I have suggested were obtained from the Tatra and Świętokrzskie mountains. The evidence of iron working at Velemszentvid should be noted as one possible indication of this connection. The second is the position of eastern Slovakia.

This area, and in particular the site of Zemplín, represents something of an unknown quantity. Contacts certainly existed with northern Slovakia and southern Poland, and probably with southwestern Slovakia as well, but the extent and importance of connections with sites in the Ukraine, Romania and the Tisza valley in northeastern Hungary is unclear, though the existence of other central sites similar in form

to Zemplín suggests that the area was one with social institutions no less complex than those further west. Zemplín itself appears to be the western most outlier of this group of sites (Kotigoroshko 1989), but the relative lack of research in northeastern and central Slovakia (Pieta 1982a: Figure 1) may conceal connections between this area and the north and west of the country. Though it was impossible to examine the material concerned, the tight distribution of slip decorated pottery around Zemplín (Figure 5.17) might indicate that it acted as the focal point for the surrounding region.

In the first part of this section I have described the exchange of goods which took place between the two geographically distinct areas from a functional point of view. I have not discussed the points made in chapter 3 regarding the discursive role of exchange, primarily because of the difficulty of actually defining the types of goods in circulation and the characteristics of their distribution. The same problem besets discussion of the exchange of goods at a local and intra-regional level. It is clear from the examples described in chapter 2 that such exchange took place and that it involved a similar range of goods to those discussed in the case of Bohemia and Moravia (and with similar relationships to invisible goods and possibly to people). The full complexity of the situation is far from clear however and given these problems, which require resolution through detailed studies of a wide range of the artefacts concerned, I shall concentrate on the slip decorated pottery.

In chapter 5 I described the distribution of the pottery as defining two areas of circulation, one covering the Danube plain and the other northern Slovakia, Małopolska and eastern Slovakia. These two areas of circulation have no obvious relationship with the distribution of any other individual type of artefact, although partial homologies exist with the distribution of different coin types, with the ethno-cultural zones, described in chapter 2 and defined by the distribution of hand-modelled pottery, (whatever these may actually signify), and with the geography of the area. Given the situation described in the previous section an important point is that the pottery was not involved to any significant degree in the exchange of goods between the northern and southern areas.

The circulation of the pottery amongst the sites on the Danube plain appears to be comparatively straightforward, occurring as it does across an area which, in geographical terms, is relatively homogeneous and between sites apparently similar in terms of both status and function. It is likely that the Danube played an important role in the maintenance of contacts between these settlements. A

number of questions remain unresolved regarding the relationship of the central sites to the smaller ones such as Chotín, Kamenín and Iža, but these cannot be answered without further excavation.

The situation in the north and east is somewhat more complicated. In chapter 5 I suggested that the analysis of the slip decorated pottery indicates that workshops existed in the Liptov basin, in Małopolska, and at Zemplín, and that the products of these workshops were exchanged widely amongst the sites in this area. This raises questions regarding the nature of the links between the Púchov culture, the Tyniec group and the population of eastern Slovakia (part of the Celto-Dacian group), which, on this evidence, differed from those relationships which existed with the societies to the south. Traditionally these northern groups have been considered as separate cultural entities but their geographical proximity (a number of Púchov sites lie on the Polish side of the Tatras) and the evidence of the slip decorated pottery suggests that they should be considered as having had, at some level, a close mutual involvement.

As in Bohemia and Moravia the central sites dominate the distribution of the pottery, but the distribution of the distinctive motifs and forms indicates that the interactions between the inhabitants of these sites which involved the pottery were both more regular and more intense than was the case in the west. The variations between the assemblages from the central sites are less marked than are those between the oppida and, with their small defended nucleii, extensive undefended settlements and greater degree of mutual interaction, the central sites seem to have existed under somewhat different conditions to those found in the west. The extent to which this reflects a different perception of the importance of the pottery in the two areas, or a different degree and type of interaction between the inhabitants of the central sites, it is difficult to determine. On balance it seems likely that the pottery was employed in different ways in the two areas, and that in the east it entered into exchanges between equals, resident on the central sites, to a far greater extent than it did in the west, and was also more closely involved in relationships with local rural sites. In contrast it seems that some form of sanction existed concerning the use of slip decorated pottery in exchanges between the northern and southern zones, although, as with the movement of the pottery between the oppida, this did take place on occasion. Such sanctions can be envisaged in terms of a variety of social practices, one of which is the ranking of goods and associated restriction on their exchange which I described in chapter 3.

6.5 Conclusions.

In chapter 3 I described at some length an approach to non-capitalist economies based upon the principles of Political Economy, and suggested that these provide a means through which it is possible to interpret archaeological data in economic terms. In chapters 4 and 5 I used methodological principles compatible with these aims to describe aspects of the production and circulation of the slip decorated pottery, and in this final section wish to discuss some of the more specific points raised in chapter 3. The first of these is the question of the existence of a debt-based rather than a value-based economy. In my discussion of the economic relationships represented by the circulation of the slip decorated pottery above I have deliberately avoided drawing a conclusion upon this matter. There are certainly indications, based on the distribution of the slip decorated pottery and the absence of clear 'market areas' associated with the oppida, that the production and circulation of goods was circumscribed by forces other than those of the market (in the neo-classical sense of the word). The extent to which it is possible to move beyond such a general statement and to suggest the form that the economy might have taken remains limited however, as the following example will show.

It is possible to set out a scheme of gift ranks (Table 6.2) according to which the circulation of various types of goods can be seen as having been circumscribed. Such a scheme shares the problems which I have discussed in relation to that proposed by Gosden (section 3.4), in that the criteria used to rank the various types of goods are based upon the input into, and the context of, production and as such might equally form a basis for relative values rather than relative ranks. For this reason and because of the ambiguities associated with the general lack of data on the exchange of goods, I do not feel that it is possible to assert that the economy of the European Iron Age was one in which debt was the dominant structuring principle behind the circulation of artefacts. This is not to say that, in the absence of unequivocal evidence, market principles should be assumed to have been dominant (at an empirical level the distribution of higher order goods indicates otherwise), but rather to urge caution in the interpretation of the situation and to advocate further empirical, problem orientated, research in accordance with the principle of historical specificity which is central to Political Economy and which respects the principle of the past as Other, advocated by recent post-processualist critics (Hill 1989, Thomas 1990c)

The second point, associated with that made above, concerns the extent to which the period can be seen as transitional from one form of social integration to another, specifically from a clan-based to a class-based principle of organisation. In section 3.4 I summarised Gosden's interpretation of the southern

English data which he has claimed represents such a change in structuring principles. The criteria used, a decline in conspicuous consumption and a move from locally autonomous production towards centralisation and specialisation, have traditionally been regarded as characteristic of the situation associated with the establishment of the oppida. The situation as I have described it in chapter 2 and in this chapter does not conform to such a pattern. The establishment of the oppida and the central sites certainly represents a degree of reordering within society, but this does not appear to have been associated with any major changes in the organisation of the production of the majority of types of goods. Rather it seems to have involved the development of new forms of production and exchange (of slip decorated pottery and glass) which existed alongside the pre-existing economic structures. The nature of the goods produced and the physical manifestations of the new forms of organisation (the oppida and *Viereckschanzen*) points to political and social, rather than to fundamental economic, change. The exact nature of this change, and the extent to which it led to a further increase in internal social tensions is unclear, but the elaboration of the oppidum ramparts and the activities associated with them (destruction and rebuilding) may point to activities designed to reinforce the position of the (?newly) established authorities in the face of potential or actual dissent, whether internal or external. As have suggested in the first part of this chapter, such changes may be bound up with the move away from the overt concentration on the role of the individual and towards that of the group which is also reflected in the ending of the practice of inhumation burial.

Fewer details are clear regarding the situation in Slovakia, particularly in the south, though it seems that here, as in the west, the central sites on the Danube plain had no equivalent predecessors in the Middle La Tène period (with the exception of Bratislava which was briefly preceded, perhaps only in chronological terms, by Plavecké Podhradie). These settlements were the result of a tendency towards centralisation which may have sprung from a different source to that seen in the west, and the difference in form and in the organisation of space between these sites and the oppida may be a tangible counterpart to differences in the relationships between the populations of the sites themselves.

In the north the question of economic changes associated with the emergence of the Púchov culture and the Tyniec group have been obscured by discussions of their ethnic character and ethnogenesis. It seems that the pre-Púchov stage was characterised by the foundation of new settlements and an increase in the working of metals (copper alloys, silver and iron). There were also changes in ritual practices and an abandonment of the Late Hallstatt cremation rite (Pieta 1981, 1982a:156-8) and it

is clear that the Púchov phase was associated with a greater degree of centralisation than had been the case previously. To a degree these new sites do represent a centralisation of productive capacity, but it is by no means clear that this is associated with any change in the control of this capacity. In site-specific terms the context of production remained the *Gehöftsiedlungen*, and any suggestion that these were associated with a centralisation of control requires greater substantiation than an assumption that centralisation of settlement is necessarily associated with centralisation of authority.

The preceding discussion represents the conclusion to this thesis and in the following final paragraphs I intend only to outline some of the potential avenues of research which were not explored owing to the constraints of time and money.

The first of these, to which I referred briefly in chapter 5 (section 5.5), is the area of design and decoration. The field of 'Celtic Art' is one that has been the subject of an enormous number of studies by scholars and others of widely varying abilities and insight. Although slip decorated pottery has been discussed in such studies it is almost invariably as a footnote to the more spectacular metalwork of the Early and Middle La Tène periods. Comments such as that of Sandars

'We shall not find the best of La Tène art in its pots' (1985:398)

abound, together with observations on the degenerative nature of the artistic vision in Late La Tène society (Szabó 1971:58, Szabó and Petres 1974). From an art-critical point of view these observations may make perfect sense (although in my experience the reactions of artists, as opposed to critics, to Late La Tène pottery are somewhat different), but from an archaeological point of view they often seem to represent a simple ethnocentrism which not only fails to take into account the context of production and use of the objects but also fails to situate the design and the decorative motifs employed within the contemporary social framework. A number of studies exist which have examined the significance of the design and decoration of pottery (including Miller 1985, Hodder 1979 and Sterner 1989, all with further references) and it is clear that studies of material culture which rely upon an evocation of the 'artistic impulse' as an explanation for change and variability in design are wholly inadequate. An evaluation of the place of the slip decorated pottery as a bearer of meaning in the context of Late Iron Age society requires the analysis of a number of other problems relating to aspects of the design and decoration of material culture. Principal amongst these is the question of the relationship of the style and design of material culture to contemporary categorisations of the world and its role in the control of this world.

A second line of approach is the study, in greater detail, of the technology employed in the manufacture of the slip decorated pottery. Although I have given a basic description of this in chapter 4 a number of questions remain unanswered, particularly concerning the composition, origin and method of production of the slip. Associated with this is the question of the origin of the clay and the location of the workshops, which petrological analysis failed to identify. Further characterisation studies, focussing on the clay minerals rather than on the inclusions would probably serve to identify the clay sources, and would be of particular value in distinguishing between the workshops active in northern Slovakia and southern Poland.

At a general level this thesis has, like a number of earlier studies, highlighted the bias towards certain classes of site, notably the oppida. The present prospects for research in the neglected areas of rural and undefended settlement are however brighter today than hitherto, with new programmes of research in Czechoslovakia being orientated towards rescue excavation in threatened environments (notably in northwestern Bohemia) and the compilation of an 'Archaeological Map' of large parts of Poland. As I have tried to show here an understanding of the economy and its inter-relationship with all aspects of society can only come from a full appreciation of the complexity of the society in question.