

“The Middle Ages: A Concept too Many?”
Inaugural Lecture (Edinburgh, 1996)

PART I. THE ORIGINS OF THE MIDDLE AGES

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The Middle Ages. An Economic Historian's Perspective

The Middle Ages has basically had a very bad press. The very identity of the Age has, both spatially and chronologically, been formed by reference to the norms of other civilizations. Eighteenth-century scholars, who shared with contemporaries that fascination with the architectural and artistic forms of Classical Antiquity then being re-created in their own times, engaged in the common view (still often expressed today) that the intervening years had seen nothing created of comparable grandeur. The origins of the current state of enlightenment in these matters need be sought no earlier than the Renaissance when the rediscovery of Classical forms re-opened that path of learning which was to achieve ultimate realisation in the Enlightenment. Subsequently, those who rooted the original formulation of the democratic institutions of their own age in the political ideals and institutional forms of Classical Greece have reinforced this view. For them medieval feudalism was a regressive system, interposed between the libertarian institutions of Antiquity and their own age. Late comers to this historical debate, economic historians, whose work first found expression in the studies of the "German School", merely adopted and adapted the existing historiography. For Sombart, Bloch and Pirenne and others the task confronting them was to chart the decay of the institutions of Classical Antiquity, examine the origins and nature of the emergent feudal order and finally to trace its displacement by the institutions associated with an emergent Capitalism.¹ Once again for them medieval feudalism was a regressive system which created a stable-state, low productivity level economic system which was only transformed in the sixteenth century by an emergent Capitalism. Such a view soon found ready acceptance amongst Marxist historians. They perceived the regressive nature of the feudal economy as arising from the activities of the dominant landlord class who squandered the surplus they extracted from the bulk of the population, creating a lack of investment funds so that the latter could not transform their pitiful existence.² Only in the sixteenth century, during the "Age of Discoveries," was a new world economic system perceived as being created. The evolution of "Commercial Capitalism" in western Europe allowed the merchants of that region during the years 1500-1700 to exploit the rest of the world and establish the beginnings of that European economic supremacy which finally was realised in the "Industrial Capitalism" of the period from 1700. to the present day.³

In the following lecture an alternative, somewhat more optimistic, view of the Middle Ages will be presented from the perspective of an economic historian. It originated from an empirically derived observation that each of the great civilizations of Antiquity was normally associated with a major silver production boom: Athenian

¹ J. E. Anderson (ed.), *Land and Work in Medieval Europe: Papers by Marc Bloch* (London, 1967) and *Slavery and Serfdom in the Middle Ages: Selected Essays by Marc Bloch* (trans.) W. R. Beer (Berkeley, 1975); H. Pirenne, *Medieval Cities their origins and the revival of trade* (Princeton, 1925) and *Mahommed and Charlemagne* (London, 1939)

² T. H. Aston & C. H. E. Philpin (eds.), *The Brenner debate: Agrarian class structure and economic development in preindustrial Europe* (1985), chapters 1, 6-7, 10.

³ I. Wallerstein, *The Modern World System* (Cambridge, 1974) and *The Capitalist World Economy*

civilization and the exploitation of the mighty Laurion mines; Republican and Imperial Rome and the working during the years ca. 50 B.C.-250 A.D. of the Ibero-British mining complex. Nor during the Middle Ages and beyond does there seem to have been any weakening of this association. Initially, following the collapse of production at the Ibero-British mining complex there was an eastward shift in the focus of activity, first to the Caucasus and Armenia (250-550 A.D.). Then it passed to Mawara'n-nahr (the civilised region in the basin of Amu-Darya and Syr-Darya which was distinct from the Semiryeche and eastern Syr-Darya) where from 560-960 A.D there was a flowering of Islamic civilization. Subsequently, amidst the monetary turmoil associated with the collapse of production, there was here an industrial diaspora. This led to the transplantation of silver and gold production to Europe and Africa respectively. Here production again went through a distinctive long-cycle from 1130-1540 A.D. Finally, mining activity was once again displaced - to Central and South America, where production again underwent two successive long-cycles during the years 1540-1740 A.D. and 1750-1820 A.D.

Just as in the period of Classical Antiquity, on each of these occasion there was again a flowering of a new civilization: Byzantine-Sassanid (250-550 AD); Central Asian (560-960 AD) and Mediæval European (1040-1540 A.D) before the great Central-South American specie boom again resulted in a transformation of the existing world order, extending and enhancing activity within Early Modern Europe (1540-1820 A.D). It will be my task, therefore, in the following lecture to undertake an investigation into the nature of the mechanisms which caused major silver (and gold) booms to be translated into fundamental changes in the "real" economy, with particular reference to those changes which brought into existence during the years 1040-1540 A.D. a distinctly mediæval economy.

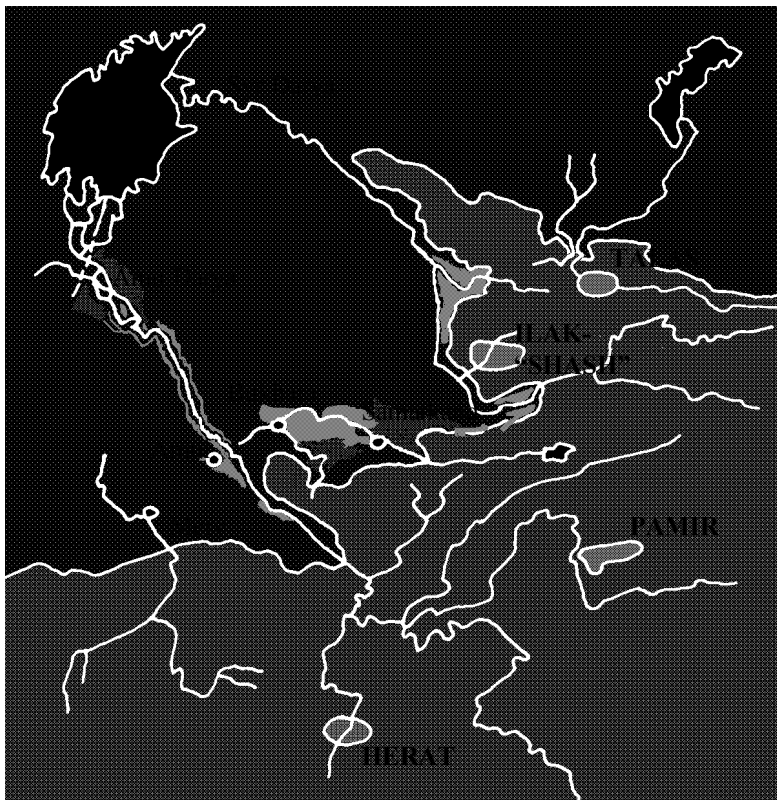
Mawara'an-nahr: Central Asia triumphant.

For some six hundred years prior to the twelfth century the population of Europe existed in what was little more than a western appendage to the civilized world, inhabiting lands on the periphery of a world system whose epicentre lay in Central Asia. Between ca. 530 and ca. 1130, precious metals from Central Asia had dominated world specie markets. At its apogee, during the course of the years ca. 850-960, the mining and metallurgical complex there was of truly impressive dimensions.⁴ It comprised three main production complexes. The first in the valley of the Angren and the mountains of Karamazar, within the region of Ilak or - "Shash" (Uzbekistan), had, initially with the mines of the valley of the river Piandzhshira in north-western Afghanistan, undergone a major mining boom during the years ca. 560-670. But thereafter production at Ilak stabilized during the subsequent production-cycles of ca.710-780 and 850-960, before finally collapsing during that of ca.1020-1120. The second centre was located in the Pamir (Tadjikstan), in the vallies of the rivers Bazar-Dara, Torguz-Bulak and Shugnan, where production of silver from argentiferous lead peaked in the years ca. 850-960, displacing Ilak as the major mining complex, before output here also declined and during the course of the next production-cycle of ca. 1020-1150 the mining of precious stones replaced the extraction of metalliferous

⁴ For brief surveys describing, on the basis of both archaeological and literary sources, the mining complex at its height, during the years ca. 850-960, see M Dekówna, "Stan badan nad górnictwem srebra i tsw. kryzysem srebra w Azii srodkowej", *Archaeologia Polski*, XVI, 1-2 (1971 pp. 483-502 and V. V. Bartold, *Turkestan v epokhu Mongolskago nashestviya* (St. Petersburg, 1900) which consists of two volumes, of which volume I comprises a selection of illustrative texts in Oriental languages and volume II the Russian text. The English edition of this latter work *Turkestan down to the Mongol Invasion* (London: E. J. W. Gibb Memorial Series, New Series, V. 1928) gives only a translation of volume II. It has been estimated in S. Bolin, "Mohammed, Charlemagne and Ruric" *Scandinavian Economic History Review*, I (1953), p. 21, that, during the course of the eighth and early ninth century production-cycle, the Ilak or "Shash" workings had a peak output of some thirty tons of year. Such a figure would be broadly consistent with that, derived from slag analysis, of ca. 1.66 tons of silver per year on average for each of the fifteen to twenty major workings in operation at the Talas during the production-cycle of ca. 1020-1120, on which see Yu. F. Buryakov, "Drevnii serbryannii rudnik Lashkerek", *Sovetskaya Arkheologia*, no. 1 (1965), pp. 282-289 and the same author's "O mestonakhozhdenii i 'Serebryannogo rudnika Shasha'" *Obshchestvennie nauki v Uzbekistane*, no.12 (1965), pp. 28-30. It is possible that these figures for the second and fourth production-cycles may be lower than during the first and third, when output at Ilak -"Shash" was supplemented by silver from Afghanistan and the Pa-

ores. The third complex, known to arab writers as “Shel’ dzhī”, was located on the upper reaches of the Talas river (Khirghizia) and comprised three micro-regions strung out along the valley, each encompassing a production complex-urban conglomeration, a hinterland where agriculture and animal husbandry was practised and a series of fortresses guarding access to the region. Here, although production began during the years ca. 850-960, activity was most intense in the period 1020-1120 when attempts were made to compensate for the decline in output at Ilak and in the Pamir.

For some six hundred years the Central Asian mines contributed vast quantities of silver to world specie markets. Peak output attained levels of some thirty to forty tons a year, during each of the four successive production-cycles, as the constituent production-complexes made their own distinctive contribution to what was, by contemporary standards, a massive output of precious metals. Particularly during the third of these production-cycles (ca. 850-960), however, when the region passed from direct Abbasid control into the hands of the Tahirid (822-873) and Persian Samanid dynasties (874-999), the mining-metallurgical communities formed only one element in an infinitely complex and varied economy. One contemporary, Istakhri (writing in ca.



930-933), indeed, affirmed that “the inhabitants of Mawar-a’ an-nahr (the civilised region in the basin of Amu - Darya and Syr - Darya which was distinct from the Semiryechye and eastern Syr-Darya) have themselves all in plenty and there is nothing produced elsewhere which they do not have.”⁵ Nor was this pure hyperbole. At the entrances to the valleys and along the lower courses of the rivers which flowed from the Hindu Kush to the

Aral Sea the waters were deployed through complete irrigation schemes to transform the desert into a horticultural and agricultural paradise. Successive rulers expressed a continuing and intense interest in promoting agricultural prosperity, the first organiser of Khorasan - Abdallah ben Tahir (830-844) establishing the foundations for these policies by his formulation of new irrigation laws- the Book of Canals: *Kitab al-Quniy* - which was to last for more than two centuries. As a result the whole of the lower course of the Amur-Darya, from Amul to the delta of the river, became one vast

continuous complex of orchards and vineyards yielding grapes, raisins, almonds, melons and sesame. These complemented the wares - nuts, grapes and truck crops - - produced on the irrigated lands in the vicinity of Samarkand and Bukhara. Beyond these irrigated lands, which were primarily employed to produce high-value horticultural wares, precipitation at this time was sufficient, moreover, to allow the lands of Abghar, between the two great cities, to support an extensive pastoral-arable regime. This in years of good harvests was capable of feeding the whole population of Soghd and Bukhara and even in bad years was sufficient to require only minimal imports of grain, obtained through the intermediary of Uighurs and Muslims, "from beyond the northern mountains" - the Yenisei - where wheat was grown. Secure in abundant agrarian supplies, the inhabitants of the less favoured regions and the great towns, like Bukhara or Samarkand, whose population may have numbered 500,000 at this time, moreover, turned to manufactory for a livelihood. They produced textiles (Tabari tissues and Ushmuni fabrics of Bukhara; satins and Sinizi cloths of Samarkand, napkins of Karminiya; red felt winter cloaks from Raminjab; striped cloths, blankets, satins, Mulham and Aranjan fabrics from Khorasan). They also fabricated carpets (prayer carpets of Rabinjan and Bukhara together with floor coverings for inns in the latter centre). Metal wares (copper lamps and vessels from Bukhara or Samarkand; pewter of Rabinjan together with needles and scissors from Shash) and armaments (bows and quivers from Shash and swords from Farghana and Isfijab) were all made together with a host of other wares.⁶

In response to the mining boom of ca. 850-960, the economy of Mawara'an-nahr had evolved at two distinct levels. At its base was the mining economy, centred on the production complexes of Ilak, Pamir and Talas. From thence flowed large quantities of silver and gold. This allowed the rulers to meet their obligations to the Caliph - from 38 to 48 million dirhams a year between 826/7 and 844⁷ - and their populations to satisfy their own monetary requirements and provide substantial quantities of the precious metals for export. For a century silver was distributed from Mawara'an-nahr to distant specie-short lands. This generated a down-the-line reciprocal commodity trade. Distant produce, like the renowned swords of *Firanga* (Frankia) or *Hind* (India), filtered slowly to the Samanid lands. With them came a mass of more mundane produce supplied directly by those intermediaries who had first received the silver: like the furs, slaves and livestock from Bulghar or the paper, silk and porcelain from Semiryeche. Such wares, moreover, in supplementing the prolific produce of domestic provenance, provided raw materials for those manufactories, in the second-tier of the economy. These created high value-added items, capable of being sold throughout the Muslim lands: the silks and cottons of Zarafshan, swords of Farghana and even those Khorasan melons, which, when packed in leaden moulds with snow, were transported to Baghdad, where they were sold at 700 dirhams a piece. An infinitely complex and highly productive economy had evolved in Mawara'an-nahr in

⁶ Listed by Maqdisi (985) and recorded *ibidem*, II, p.245.

⁷ V. V. Bartold, *Turkestan*, II, p.227. During the inter-cyclical production crisis, prevailing at this time, the local dirham contained only 14 per cent of the silver prescribed by the canonical standard, although subsequently, under the Samanids, it was restored to 90 per cent of that standard, *ibidem* pp.

response to the mining boom of 850-960 which left its distinctive imprint on the region's long-distant trade.

Only the intermediaries in this latter trade were known to contemporary arab writers but their works chart its direction - to Semiryeche and China beyond, to Tukhuristan and India or via Merv to Iran-Irak and finally northward to Khorasan and the steppe. In the first two directions a regular trade in gold and silver maintained the base of both Chinese⁸ and Indian currency systems and brought forth in exchange large quantities of exotic wares, like the Chinese paper, silk and porcelain which found a ready market in Mawara'an-nahr. Westward the pattern was somewhat different. The vast tribute to the Califate brought no reciprocal goods in return but in equilibrating specie stocks between the regions opened up a market for the high value-added produce of Central Asia which was sold throughout the western muslim lands. Finally in the trade northward to Khorasan and the steppe, the acute specie shortages prevailing in these lands, ensured a massive silver outflow thence. The coins themselves chart their subsequent course, the distribution of kufic hoards indicating that at this time they passed north by the caravan route from Khiva in Khorasan to Bulghar on the Volga and then followed the course of that river to north-western Russia, Scandanavia and the European lands beyond.⁹ During the years ca. 850-960 the economy of Mawara'an-nahr thus formed the focal point of a trading system of truly inter-continental dimensions, not only the specie of these lands but also their high-value produce finding a ready market throughout Asia and Europe at this time.

Then at the beginning of the eleventh century this whole Central Asian mining complex of Mawara'an-nahr, which for some five hundred years had provided the focus of the prevailing inter-continental trade system, collapsed. In part this was due the exhaustion of the principal mineral deposits in Ilak and the Pamir. Equally important, however, was a process of infra-structural decay as during the reign of Mahmud (-1030) excessively heavy taxation led to rural decay and the desertion of many districts with the resultant ruin of their irrigation works. Then, on top of this, came the terrible year of 1011 when, owing to early frosts, the corn failed to ripen and there was terrible want: in Nishapur and its neighbourhood 100,000 were said to have perished, dogs and cats were exterminated and there were even cases of cannibalism. By the end of the first third of the eleventh century the economy of Mawara'an-nahr was in ruins and whilst at this time the Semiryeche and the lands of the eastern Syr-Darya enjoyed a brief period of prosperity on the basis of activity at the Talas mining complex, this centre revealed the beleaguered nature of the economy within which the populace was forced to operate.¹⁰ Each of the three micro-regions strung out along the

⁸ On the relationship between the Chinese copper cash and imported supplies of gold and silver in ca. 920 see Miyazaki Ichisada, *Godai Shosho no tsuka mondai* (The Currency Problem in the Five Dynasties Early Sung) (Kyoto, 1943), p.103 as quoted in M. Elvin, *The Pattern of the Chinese Past* (London, 1973), p. 148.

⁹ For a useful English-language survey of the literature on the evidence of Russian and Scandanavian coin hoards see P. H. Sawyer, *The Age of the Vikings* (London, second edition, 1971), chapter 5.

¹⁰ On the Semiryeche and the lands of the eastern Syr-Darya at this time see V. V. Bartold, *Ocherk istorii Semirech'ya* (Verniy: Pamyatnaya nizhka Semirechenskago oblastnovo statisticheskago komiteta na 1898, t. 2. 1898), reprinted with corrections and an introduction by A. Bernstam, Frunze 1944. An English translation by V. and T. Minorsky entitled *History of the Semirechyé* was published in V. V. Bartold, *Four studies on the History of Central Asia* (Leiden: Russian Translation Project Se-

valley of the Talas, encompassed a production complex-urban conglomeration and a hinterland where agriculture and animal husbandry was practised, but each required the construction of a series of fortresses to guard access to their lands and ensure security therein. In these circumstances trade continued but was subject to a major realignment and diminished level of activity. Within the decayed Mawara'n-nahr economy the new Kharakhanid rulers who had displaced the Saminids in ca.990, faced with acute monetary disorders and commercial decline, were forced to act, introducing into their territories the institution of *itka*¹¹ in an attempt to control the terms of trade in an environment where the rapid deterioration of the silver currency favoured a major commodity trade boom and a reciprocal net inflow of precious metals. As a result, in exchange for high-priced Central Asian wares, gold flowed from China, transforming the monetary systems of Transoxania and the lands beyond. Commodities - silks, porcelain, brocades, cinnamon and khutuwood (for fork-handles) - also passed westward, providing the raw materials for local manufactories and commodities for an active trade in China wares with the western muslim lands. At this time only in the Semiryeche was there an active silver export trade, foreigners, and particularly Persians, flocking from the late tenth century to the town of Shel'dzhi to buy up supplies of Talas silver to transport to the Ghaznavid lands of Central Asia and India.¹² Elsewhere the specie export trade had come to a halt and even on occasion had been reversed, with dramatic effects on those nations encompassed within the pre-existing world-wide specie distribution system. Whilst the Ghaznavids, secure in supplies of Talas silver, thus continued to strike coins of that metal in the Indian sub-continent, elsewhere, from ca. 975-1125 an acute and unrelenting "silver famine" developed,¹³ which left no part of the known world unaffected. In lands extending from the Atlantic to the borders of China and Ghaznavid India by the end of the eleventh century, as the "silver famine" reached its height, no Islamic or Christian ruler was striking significant quantities of silver. It was only by a geographical relocation of mining activity and associated realignment of specie distribution networks that monetary stabilization was achieved here and then only some two hundred years after the beginnings, in the early tenth century, of the inter-continental "silver famine". During these years, ca. 930-1130, an industrial diaspora took place as the major focus of gold and silver production was relocated from Central Asia to Africa and Europe respectively. This created a new intercontinental monetary-commercial system began to emerge within which the flow of these metals was reversed.

¹¹ E. A. Davidovich, "Gorod, remeslo i denezhnoe obrashchenie v Srednei Azii perioda tak nazivaemogo 'srebryanogo krizisa' (XI-XIII vv.)" in *Materiali vtorogo soveshchaniya arkheologov i etnografov Srednii Azii* (Moscow-Leningrad, 1959), pp.38-46. On the substitution of gold for silver in Transoxania see E. A. Davidovich, "Iz oblasti denezhnogo obrashcheniya v Srednei Azii, XI-XII vv.", *Numismatika i Epigrafika*, no 2, (1960), pp.55-67 whilst the export of this metal to the west is considered in M. E. Masson, "K voprosi o vzaimootnosheniyakh Vizantii i Srednii Azii po dannim numizmatiki", *Trudi Sredneaziatskogo Gosudarstvennogo Universiteta (Istoriya)*, NS, XXIII (1951), pp.101-103. Commodity trades are described in *Hudud al- Alam. The Regions of the World A Persian Geography 372 AH-982 AD*. Translated and explained by V. Minorsky with a preface by V. V. Bartold (Oxford: E. J. W. Gibb Memorial. New Series, XI. 1937), § 9, p.84.

¹² P. P. Ivanov, *K istorii razvitiya gornogo promysla v Srednei Azii. Kratkii istoricheskii ocherk* (Leningrad-Moscow, 1932), p. 20.

¹³ A.M.Watson, "Back to Gold - and Silver", *Economic History Review*, Second Series, XX, 1 (1967),

Dark Age Europe: A Regressive Economy

For some five hundred years, from ca. 620-1120, the European market environment was not a propitious one for those engaged in economic pursuits to reap those benefits deriving from participation in a system of intensive commercial operations. The populations of that continent at this time existed in what was little more than a western appendage to the civilized world, inhabiting lands on the periphery of a world trade-system, whose epicentre lay far away in Central Asia. From thence periodically - in 560-670, 710-820 and 850-960 - Europe received precious metals, which were exchanged for the produce of these specie-short lands on the western extremity of the known world. Given the marginality of these territories within the prevailing commercial system, however, the quantities of specie received were small, probably no more than the 300-400 kg. of silver a year which could be produced from indigenous sources, in 640-750, 810-850 and 960-1070 AD,¹⁴ when the flow of eastern silver was stayed. In such circumstances, there were acute shortages of precious metals and their exchange value in relation to commodities was fundamentally enhanced. Even the most diminutive piece of coined precious metal, like the silver penny-denier, could be exchanged against an enormous volume of commodities.¹⁵ In relation to the fine gold mancuses and solidi-nomismata which, continued to circulate in small numbers in the West their purchasing power was truly awesome. With a handful of such coins, it was possible to buy a not insubstantial estate.¹⁶ In these circumstances, in conditions of silver price stability, such as prevailed in Europe from the late seventh to the late eleventh centuries, a basic account-weight system prevailed. This used either foreign coin (normally kufic) by weight, in north-

¹⁴On the British mines in the period 420-620 A.D. see I. Blanchard, *Stagnum or Plumbum Album: Post-Roman British Metal Production and International Monetary Systems, ca 420-620 AD* (The University of Edinburgh: Studies in Economic and Social History, Discussion Paper No. 3. 1993), whilst for an estimate of silver production from raw materials derived from this source in the period 620-720 A.D. see "The Origins of Medieval Western-European Silver Monometallism, 420-720 A.D." in Rainer S. Elkar, Cornelius Neutsch, Karl Jürgen Roth & Jürgen H. Schwacht (hrsg.), "Vom rechten Maß der Dinge" *Beiträge zur Wirtschafts- und Sozialgeschichte. Festschrift für Harald Witthöft zum 65 Geburtstag* (St Katherine, 2 Bd., 1996), I, pp. 33-58. On Harz production in the period 960-1070 A.D. see C. Bruhl, *Fodrum Gistum servitium regis. Studien zu den wirtschaftlichen Grundlagen des Königtums im Frankreich und in den fränkischen Nachfolgestaaten Deutschland, Frankreich und Italien vom 6. bis zur Mitte des 14. Jahrhunderts* (Köln-Graz: Kölner historische Abhandlungen, Bd. 14/I-II.1968) ,I, p. 175.

¹⁵ The enormous purchasing power of silver in western Europe was particularly noted by such contemporary Arab writers as Ibrahim-ibn-Yakub who contrasted the situation with that prevailing in their silver-rich homelands: J. Stepkova, "Denar-kinsar Ibrahima o Jakuba a jeho kupni sila v Praze r 965", *Numismatiké Listy*, X (1955), pp. 137-139 quoting from Th. Kowalski (ed.), *Relacja ibrahima ibn Jakuba z prodrozy do krajów slowianskich w przekazie al-Bekriego* (Kraków: Monumenta Poloniae Historica, seria II, t. 1. 1946), p. 49.

¹⁶ See eg. H. P. R. Finberg, *The Early Charters of Wessex* (Leicester, 1964), no. 469, p. 137; A. J.

ern and eastern Europe, or recast pieces to pass by tale in southern and western Europe.¹⁷ In as far as, the monetary system involved actual specie transactions; however, for the purposes of extended exchange transactions, the component therein that was given physical embodiment (i.e. the coin by either weight or tale) was determined by convenience or use. Within the Carolingian Empire, for instance, the system for the measurement of specie involved libra, solidus, denarius and fractions of the latter such as obolus. However, given the relatively high value of specie in relation to goods only the smallest units - the *denarius* (penny) and below - were worth giving physical embodiment for the purpose of normal transactions.¹⁸ The remaining measures were used only in occasional transactions involving set-weight stamped specie or un-coined bullion often held in the form of artefacts.¹⁹ Monetary use within this system was, accordingly, largely restricted to contemporary elites. In countries like England, at least in the south,²⁰ the crown could impose its regalian right to mint all pieces which would circulate within the realm. This involved the king in the provision of facilities for all who needed them to convert specie into recognised coin and mints were established at almost every major multiple estate/burh-centre.²¹ These multiple estates/burh-centres, with their associated estate (later hundredal) market linked into the prevailing *portus*-system for the regulation of long-distance trade. They were the foci of the prevailing commercial network, through which passed the high-value produce of the estate (furs and slaves) and its *villa* (artisanal artefacts), carried to their final destination by estate-traders. The transactions of the lesser folk inhabiting the estate were too small to warrant the use of even the smallest denomination coin. Their obligations to their lord were made either in kind or labour²² and such artisanal wares as they produced (e.g. pottery, horn and treen-wares) were manufactured solely to meet their own needs. For most people, therefore, consumption patterns were rooted in the exigencies of their local resource base, unmodified by the impact of the market. Only members of the elite *familia* could undertake industrial activity to produce artefacts which would afford their masters with a means to access that commercial world wherein they could obtain goods which would allow them to structurally modify their basic patterns of estate originated consumption.

Given the prevailing diminutive and intermittent levels of silver production or import, moreover, it was not always possible to ensure a sufficient supply of the white metal to meet the requirements of even that limited elite group who needed silver coins for the purposes of extended exchange actions. During the years 960-1042 and

¹⁷ H. Witthöft, "Northern European Weight- Systems in the 9th and 10th Centuries and the Problems of Oriental Influence and Origin", *Journal of Central Asia (the Journal of the International Association for the Study of the Cultures of Central Asia)*, III, 2 (1980), p. 152.

¹⁸ On the system of specie measurement, in terms of both weight and value units used within the Carolingian Empire see for instance, H. A. Mishkinin, "Two Reforms of Charlemagne? Weights and Measures in the Middle Ages", *Economic History Review*, Second Series, XX, 1 (1967), pp. 35-52.

¹⁹ Such as are described by Ph. Wolff, "Monnaie et développement économique dans l' Europe médiévale", *Histoire économie et société*, IV (1982), pp. 496-7.

²⁰ In the North kufic coins continued to circulate avoiding reminting.

²¹ Peter Spufford, *Money and its use in medieval Europe* (Cambridge, 1988), maps 10A-B (925-1066 A.D.), pp. 88-9.

²² G. R. J. Jones, "Multiple Estates and Early Settlement" in P. Sawyer (ed.), *English Medieval Settlement* (London, 1979) and David Postles, "Customary Carrying Services", *Journal of Transport His-*

1080-1102, for instance, when the Harz and lesser English mines²³ provided the mainstay of European monetary metal supplies. But it was only in the north-western Europe and the Baltic that Anglo-German silver exerted a major influence on existing stocks and even here it was available in insufficient quantities to maintain a stable monetary standard. Beyond the bounds of this region conditions of acute specie shortage prevailed. Here even the use of the metals employed for coin fabrication was called into question. In these circumstances, there was a flight out of coins into goods, payments being specified *de rebus, in mobilis* or in terms of “coin substitutes”. In such transactions there were thus two elements: a specification of the value of commodities in terms of an abstract unit of measurement which may, but not of necessity, involve existing libra, solidi and denarii systems, and, a specification of the form of payment, not in this instance, in specie but a variety of commodities such as fine cloths, swords or books.²⁴ The monetary system defined as a series of relationships between the units of value, measurement or account and commodities thus existed without the use of coins. For the moment, whilst Harz silver production was maintained, such a phenomenon was confined to lands on the periphery of the prevailing European monetary system. When, during the years ca. 1042-1070 and 1102-1124, Harz output was temporarily stayed, however, the use of such “coin-substitutes” became common in England²⁵ and as their penetration into the core regions began it looked as though their use would become generalised.

Coin systems, as a tangible expression of exchange transactions, thus, existed essentially for utilitarian reasons and their ability to perform this function in the form of metallic coins was largely conditioned by the price of such metals relative to commodities - which from ca. 620-1125 was always high and on some occasions exceptionally so. In these circumstances, even in favourable conditions, coin use within the prevailing monetary system was, accordingly, largely restricted to contemporary elites. Only members of the elite *familia* could undertake industrial activity, to produce artefacts which would afford their masters with a means to access that commercial world wherein they could obtain goods which would allow them to structurally modify their basic patterns of estate-originated consumption. Others, forced to use alternative methods of conducting transactions which were more suitable for bi-lateral

²³ Only a circumstantial case can be made for recovery in the English industry at this time but see the study of J. R. Maddicott, “Trade, Industry and the Wealth of King Alfred”, *Past and Present*, no. 123 (1989), pp. 27-32 where a fascinating picture of the prosperity of the Devon mining region during the years ca. 1002-1016 is presented. On Harz see W. Hillebrand, “Von des Anfängen des Erzbergbaus am Rammelsberg bei Goslar”, *Nieder-Sachischen Jahrbuch für Landesgeschichte*, XXXIX, (1967), pp. 103- 114.

²⁴ These conclusions concerning the use of “coin-substitutes” in the lands of southern Europe are based on information contained in D. Herlighy, “Treasure Hoards in the Italian Economy, 960-1139”, *Economic History Review*, Second Series, X, 1 (1957), pp. 12-14; J. Gautier Dalché, “L’ histoire monétaire de l’ Espagne septentrionale et centrale du IXe au XIIe siècles. Quelques réflexions sur divers problèmes”, *Anuario de Estudios Medievales*, Nr. 6 (1969), pp.68-95 and P. Bonnassié, *La Catalogne du milieu du Xe à la fin du XIe siècle* (Toulouse, 2 vols., 1975-6), II, pp.883-929.

²⁵ On the representative form of payment in commodities, or organizational system for the use of “coin-substitutes” in the periods 1042-1070 and 1102-1124 see Harold S. A. Fox, “Approaches to the Adoption of the Midland System” in Trevor Rowley (ed.), *The Origins of Open-Field Agriculture* (London 1983), pp. 99-100; P. Stafford, “ The ‘Farm of One Night’ and the Organization of King Edward’s estates in Domesday”, *Economic History Review*, Second Series, XXXIII (1980), pp. 492-6; R. A. L. Smith, *Canterbury Cathedral Priory* (Cambridge, 1943), pp.128-129 and R. Lennard, *Rural*

than multilateral exchanges, experienced a prohibitive enhancement in transactions costs which forced them to adopt consumption patterns which could be satisfied by the employment of the individuals' labour in relation to their local resource base. In unfavourable conditions, even the elites were forced to adopt similar strategies.

Europe's "Age of Silver"

A result of that industrial diaspora which caused the focus of international mining activity to shift from Central Asia to Europe and Africa, for a century. from ca. 1125-1225, Europe became the foremost world silver production centre. The epicentre of the industry was located on a lonely fell land in a remote disputed Anglo-Scottish border county. Here, in the course of three distinct production-cycles (ca. 1125-1155; 1155-1174 and 1188-98), output rose in a long arc. It achieved unprecedented levels: ca. 3.5 tonnes in 1135 and some 24 tonnes in 1165 before falling to 5 tonnes in 1195 and ultimate extinction in 1210.²⁶ Initially mining entrepreneurs in the dominant British industry were alone in supplying international specie markets. But from ca.1155 they found in their continental European counterparts, who finally severed those links which remained with their early medieval past, that marginal production sector, absent within their own resource base. During the inter-cyclical crisis (in ca.1171-1188) between the two great production-cycles (in 1155-1166/74 and 1188-1198), their continental European counterparts provided compensatory increases in output to off-set British decline. For some sixty years (ca.1155-1215) both continental European and British silver producers were drawn into a symbiotic relationship. This allowed them to sustain a high and continuous level of output, which, thanks to the activities of merchant bullion dealers, was distributed through a stable and unitary market structure extending to the limits of the continent and beyond.

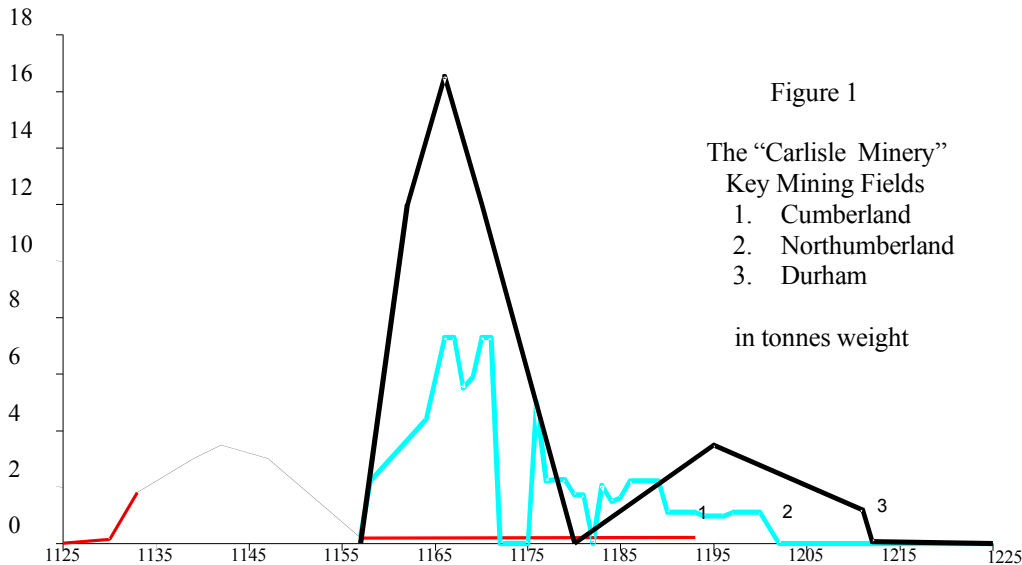
In these circumstances the impact of the silver boom, which had first made itself felt in a narrowly defined "hard monetary" zone encompassing Britain, Iberia, Flanders, Frankia, Lotharingia, Tuscany and Piedmont-Lombardy, from 1155 was experienced by populations across the whole continent. Everywhere people were forced to respond to incipient inflationary pressures expressed through price or exchange mechanisms, in a situation where an enriched merchant group could provide investment funding at steadily falling interest rates. For a century a seemingly never ending flood of specie flowed into the coffers of this merchant group, continually replenishing their cash reserves and allowing them to extend the credit base of their operations. With their new found wealth they could fund the ever increasing fixed and variable capital requirements of new enterprises; underwrite the burgeoning volume of their exchange dealings; finance their growing involvement in international trade and even satisfy the voracious appetite of monarchs for loans - at a falling rate of interest.²⁷

²⁶ I. Blanchard, "Technical implications of the transition from silver to lead smelting in twelfth-century England" in L. Willies and D. Cranstone (eds.), *Boles and Smeltmills: Report of a seminar on the History and Archaeology of Lead Smelting held at Reeth Yorkshire 15-17 May 1992*. (Historical Metallurgical Society, Matlock Bath, 1992), pp. 9-11

²⁷ M. Neumann, *Geschichte des Wuchers in Deutschland* (Halle, 1865), pp. 266-273; R. C. Mueller,

Populations were accordingly confronted with new challenges, which threatened their existing ways of life, and with the means to overcome them. How they responded can now be considered- in relation to Britain

The impact of the European silver boom of the years ca. 1125-1225 on the local economies situated at its northern epicentre was both ephemeral and insubstantial; singularly failing to stimulate major productivity increases in the “real” economy of the region.²⁸



In the lands of the Scottish crown, during the first British production-cycle (ca.1125-1155), the flood of silver was largely dissipated in an inflationary bonanza. Land values at the principal nodes of the specie distribution network of the northern mines were enhanced. The king, David I, was provided with an asset, in the royal demesne, to create the knights’ fees and baronies of a new feudal order. Nevertheless, the boom yielded no substantial changes in the production base of that new system. A knight could at the height of the mining boom, be sustained on a fraction of the land, which had once been required for a royal thegn. This was, however, only because the produce of his holding commanded a higher price than before. Accordingly when the production-cycle drew to its close engendering, during the years 1145-1155, deflationary pressures in the economy he found himself in considerably straitened circumstances which continued thereafter as Scotland failed to benefit from the successive English mining booms of the years ca. 1155-1225. Within a panoply of feudal configurations, the economy during these years simply reverted to an earlier structural

early 15th Century” in H. A. Diederiks and D. Reeder (eds.), *Cities of Finance: Proceedings of the colloquium. Amsterdam, May 1991 (Amsterdam: Royal Netherlands Academy of Arts and Sciences, 1996)*, pp. 69-71; H. J. Habakkuk, “The long-term rate of interest and the price of land in the seventeenth century”, *Economic History Review*, Second Series, V, I (1953), 44-45.

²⁸ I. Blanchard, “Lothian and Beyond: the Economy of the ‘English Empire’ of David I” in John Hatcher and Richard Britnell (eds.), *Progress and Problems in Medieval England: Essays in Honour of*

form. Lords tried to alleviate their situation by transforming the existing pattern of small-scale holdings once more into one of large “multiple-estates” whose greater volume of, predominantly pastoral, produce, though returning less cash per marketed item, allowed the maintenance of high levels of cash income. The Scottish economy under David’s grandsons, although more extensive, was very little different in form from that which had existed under Alexander I. Feudal structures remained, but they were little more than tenurial cyphers superimposed upon the economic forms of the Dark Ages. Nor was the fate of David’s burghs significantly different. Protected by that monarch, during the years of the mining boom, from the impact of foreign competition, these urban centres had maintained the internal organisational forms of an earlier age in a society, which for the moment revelled in an abundance of “foreign merchandise and the riches of distant nations.” The collapse of the mining boom simply eliminated these supplies of exotica, leaving the burghs as the sole source of a limited range of basic manufactures. By the early thirteenth century, whilst society still perceived of itself in terms of the feudal structures created by David I, these had become little more than legal cyphers which were superimposed upon an economy which operated in terms of the organizational forms of the Dark Ages.

Nor was the situation different in the northern English economy. Here, during the subsequent mining booms (ca. 1155-1225), a controlled deployment of specie supplies created conditions conducive to investment in land reclamation in order to feed the growing mining communities. With the dissolution of these communities, however, the boom collapsed and the economy once more reverted to pre-existing forms. Already, at the close of the first production-cycle (ca. 1125-1155), the pattern for the future was clear. The collapse of silver production at the Silverbeck-Minerdale workings and the elimination of inflationary pressures after 1155 caused the Cumberland economy once more to revert to its pre-1133 form. Gradually, from the mid-twelfth century, agrarian and particularly pastoral activity recovered. Both landlords and tenants made wool production a major source of income and, with the export-led trade boom concomitant upon the collapse of British silver production during the years 1198-1220, this product began to be sent abroad. A local cloth industry using water-power for the fulling process is in evidence from ca. 1200, and extractive industries (iron, lead and coastal salt) began to evolve.²⁹ The Cumbrian economy, whose development had been stunted during the mining boom of the years ca. 1125-1155, during the years ca.1155-1225, once more came into its own. In these circumstances the erstwhile “boom” town of Carlisle lost its previous international trading position and assumed a new role as regional market centre and frontier town.³⁰ Even as the Cumbrian economy reverted to a pattern of extensive pastoralism during the years 1155-1225, however, in the east the situation was very different. Here, during the subsequent mining booms (ca.1155-1225) and following the 1158 monetary administrative reforms of Henry II a careful management of local currency supplies allowed the population to undertake an investment in land reclamation and conduct a growing

²⁹ A. J. H. Winchester, *Landscape and Society in Medieval Cumbria* (Edinburgh, 1987), pp . 39-44, 116- 121.

³⁰ H. Summerson, “The Place of Carlisle in the Commerce of Northern England in the Thirteenth Century” in P. R. Coss and S. D. Lloyd (eds.) *Thirteenth Century England: I* (Woodbridge, 1986),

trade in provisions to the rapidly expanding mining communities. In these circumstances the rapidly growing mining community at Blanchland (Northumberland) soon came to dominate the whole of the existing supply network. It drew provisions not only from its immediate hinterland on the Middle Tyne but now engrossing totally the marketable produce of the coastal regions of Northumberland from Newcastle to Berwick. During successive mining booms in 1125-1155 and 1158-1180, an arable order had been created associated with new and intense patterns of settlement. At the height of the production booms it even drew ephemerally on the lands of the upper Tweed.³¹ To the south, the situation was more complex for Blanchland consumers had to compete with those of Weardale (Durham) to attract provisioners to their camp. The combined demand of the eastern production centres was enormous and far beyond the capacity of Durham producers to satiate it.³² Accordingly, the supply network underwent a major extension to incorporate the rich grain lands of the Tees and upper Eden and even those lands of North York whose products were increasingly drawn northward through markets like Thirsk.³³ Indeed the pressure on production here was such that, as more land was brought under plough, cultivators were forced to seek new supplies of fodder and began digging new drainage channels to create meadow lands in the ill-drained western portion of the Vale of Pickering.³⁴ Yet, as previously in Cumbria, with the decline of silver production and the dissolution of the mining communities at Blanchland after 1172 and at Stanhope after 1198, the economic boom collapsed and the balance of agrarian activity in the region shifted from an intensive arable farming to an extensive pastoralism. Within the local economies situated at the northern British epicentre of the twelfth-century European silver boom producers thus experienced boom-and-bust conditions which were both ephemeral and insubstantial and which in the long-term singularly failed to effect any substantive changes in the production base of the regional economy.

Elsewhere in England, the situation was very different. Here, governments were secure during most of the period ca. 1125-1225 in supplies of monetary metals to their mints. They were able thus to maintain, in the lands under their control, conditions of long-term price stability, allowing their subjects to conduct a growing volume of business at constant prices and make investment decisions free from the distractions

³¹ *A History of Northumberland* (Newcastle-on-Tyne: Northumberland County History Committee, 15 volumes, 1893-1940), IV, pp.39, 71-2; X, pp. 67, 139-40; XI, pp.159, 164-5, 178, 182-3; XV, pp. 308, 472; W. Page, (ed.), *The Chartulary of Brinkburn Priory* (Durham: Surtees Society, XC, 1893), nos. 8-11,14, 91, 118-120, 124; A. M. Oliver and C. Johnson, (eds.), *Feet of Fines Northumberland and Durham* (Newcastle: Newcastle-upon-Tyne Records Committee, Publications, X, 1931),I, no. 43; J. T. Fowler (ed.), *Cartularium abbatiae de novo monasterio ordinis Cisterciensis fundatae anno MCXXXVII* (Durham: Surtees Society, LXVI,1878), pp.80-81, 160- 164, which may be set in context by reference to the map 3.8 in H. E. Hallam, (ed.), *The Agrarian History of England and Wales*, Vol. II 1042-1350 (Cambridge, 1988), p. 248.

³² The effects of the great mining boom of 1155-1180 on the rural economy of Durham are clearly revealed in W. Greenwell. (ed.), *Boldon Book* (Durham: Surtees Society, VIII, 1852), pp. 22-3 and appendix pp. xlv-xlv and G.V. Scammell, "Seven charters of Bishop Hugh de Puiset," *Archaeologia Aeliana*, Fourth Series, XXIV (1956), pp. 79, 84-5.

³³ D. E. Greenaway (ed.), *Charters of the Honour of Mowbray, 1107-1191* (London, 1972), nos. 97, 101, 107, 119-121, 131, 148, 272, 345, 366, W.T. Lancaster, (eds.), *The Chartulary of the Cistercian Abbey of Fountains* (Leeds, two vols., 1915), I, 20 (27).

³⁴ J. C. Atkinson (ed.), *Cartularium abbatiae de Rievallae ordinis Cisterciensis fundatae anno MCXXXII* (Durham, 1889), nos. 150, 163, 165, 180-192, 205-9; D. E. Greenway, (ed.), op. cit., nos.

caused by monetary disorder. Initially, during the upswing of the first British silver production-cycle (ca. 1125-1145), a deflationary phase allowed the worst effects of Henry I's monetary mismanagement had been eliminated from the economy. This was followed, however, by a brief phase of monetary disorder during the "Anarchy",³⁵ restricting the implementation of an effective royal monetary policy to those eastern lands which continued to be irrigated by Scottish silver passing south for export from London. It was not, therefore, until ca. 1160 that the king, Henry II, was able to finally establish throughout his realm those conditions of long-term price stability so desired by both medieval kings and their subjects. Thereafter for most of the next forty years, (ca. 1160-1172 and 1188-1195) successive English kings, secure in a regular supply of silver to their mints, were able to follow his example. Only when silver supply systems were disrupted (in ca. 1172-1188 and 1196-1208) was the prevailing monetary order for brief periods threatened. On these occasions the king was forced to cede the field to those who would provide the population with the light-weight coins they required, thereby creating those conditions of uncontrolled money supply which undermined the exchange and introduced unwelcome bouts of inflation into the economy.³⁶ Such periods of monetary disorder were short-lived, however, in a society where the population's normative experience, during the years ca. 1125-1225, was one of monetary sufficiency and price stability.

Nor was the population slow to respond to this new monetary situation. In as far as, manufacturers and merchants were involved in the overseas trade sector of the English economy they were almost immediately heavily influenced by these changing monetary conditions linked to fortunes of the European silver industry. As has been suggested, because of royal monetary policy this group of their subjects was able to conduct their business at constant domestic prices and to make investment decisions free from distractions caused by monetary disorder. In formulating these decisions, however, they also had to take into account the exchange implications of monetary change. During the years ca. 1125-1225, successive British silver production-cycles pushed the output of the precious metal ever upwards until at the height of the European long-cycle in 1165/6 it achieved the phenomenal level of twenty-four tonnes a year. English monetary, exchange and price stability was achieved. This, however, took place in an environment of endemic international debasement, which incurred a

³⁵ The English "silver road" by which Scottish silver passed to London is clearly revealed by the distribution of that nation's pieces in England: the Dartford hoard, reported by J. Rashleigh in *Numismatic Chronicle*, First Series (henceforth NC¹), XII (1849-50), pp. 138 ff; the Shelden hoard, reported by W.J. Andrews in *British Numismatic Journal* (henceforth BNJ), VII (1910), pp.27 ff; the South Kyme hoard recorded by L.A. Lawrence in NC⁵, II (1922), pp.49 ff; the Nottingham hoard, initially recorded by J. Toplis in NC³, I (1881), pp. 36 ff and subsequently fully published in E.W. Danson in BNJ XXXVIII (1968), p. 43ff. and the Prestwich hoard, listed in *Coin Hoards*, I (Royal Numismatic Society, 1975), no. 360. I should particularly like to thank Marion Archbald of the British Museum, Department of Coins and Medals for making available to me a complete list of the coins found in that hoard and for a most illuminating discussion on the Scots issues contained therein.

³⁶ When, according to P.D.A. Harvey, "The English Inflation of 1180-1220" *Past and Present*, no. 61 (1973), pp. 3-30 this was the second of two phases of inflation in the English economy. The first which peaked in 1180 had subsequently abated in the 1190s, but had been followed by a second, and more acute phase from the late 1190s until 1220. These two sub-cycles, according to N. J. Mayhew, "Frappes de monnaies et hausse de prix en Angleterre de 1180 à 1220" in J. Day, (éd.), *Études d'histoire monétaire, XIIIe-XIXe siècles* (Lille, 1984), p. 160, were encompassed in "one of the greatest inflation-





considerable cost for exporters. Manufacturers,³⁷ operating on the basis of their “traditional” techniques at high cost levels expressed in terms of silver, found their wares over-priced on foreign markets. On domestic markets, moreover, they faced the serious threat that British consumers would buy “cheap” foreign wares in place of similar products of domestic provenance. A real threat thus emerged that, as in Scotland, the flood of silver would be largely dissipated in an inflationary bonanza. Such a bonanza would result in the emergence of an adverse balance of trade as commodity traders had to compete with bullion dealers who transported the white metal to the silver-short areas of continental Europe and the Muslim world beyond. By taking up funds to invest in new technologies, however, they avoided this fate, providing a range of wares which, if not exportable during the boom years, at least were able to maintain their position alongside foreign imports in a country whose consumers enjoyed a veritable cornucopia of plenty.

³⁷ See papers presented at research seminars conducted at the École des Hautes Études en Sciences Sociales, Paris in May 1996 on *Les travailleurs industrielles au moyen âge: les industries textiles et minières* (The University of Edinburgh: Studies in Economic and Social History, Discussion Paper No.

Map 2





Agricultural Development and Urban Evolution, ca 1040-1270: Key

(a) Agricultural Systems ca. 1270

Key		Land value	Draught animals	Crop rotation	Animal husbandry
A2- AB1		6-8d+	2-4 ox/horse	multi-rotational	non-work stock predom. (cattle & horse)
A1		6-8d+	2-4 ox/horse	2-3 field system	non-work stock predom. (cattle & horse)
B1-2		4-6d	4-6 ox/horse	2-3 field system	balanced system (sheep & oxen)
C1-3		2-4d	6-8 ox/horse	monocultural	draught animals only

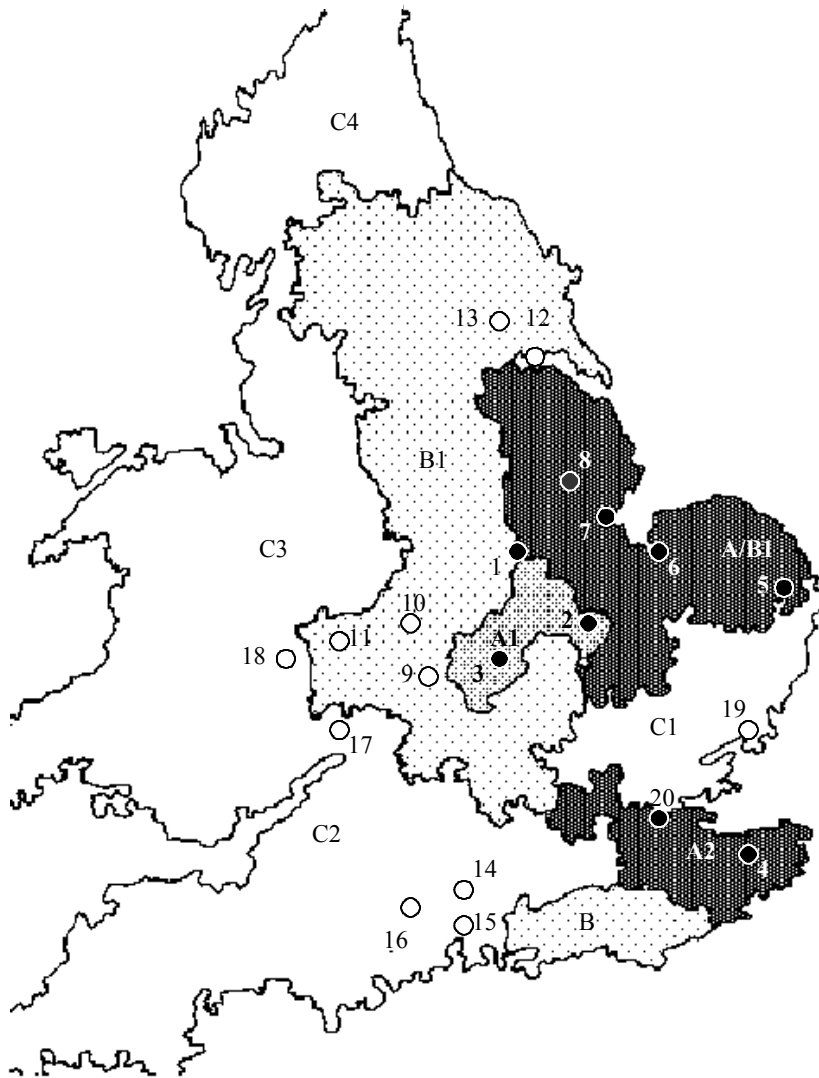
Source: Bruce M. S. Campbell, "Towards an agricultural geography in medieval England", *Agricultural History Review*, XXXVI, 1 (1988), pp. 87-98 and data concerning land values (from IPMs) kindly supplied me by Professor Campbell.

(b) Urban Evolution, ca. 1040-1270

Key		Phase I (c. 1040-1140)	Phase II (c. 1140-1208/14)	Phase III (c. 1255-1355)
A1-2		√		
AB1		√	√	
B1-2			√	
C1-2				√

Source: Identification and information concerning sources for the case studies used here will be found in appendix

During inter-cyclical downswings in English silver production (in 1145-1155, 1166/74-1188 and 1198-1215), the exchange impediments to their operations were removed. On such occasions these manufacturers' low-cost products found a ready place on international markets. Thus when, at first hesitantly in 1166/74-1188 and then more surely from 1198-1255, England's overseas commodity trades expanded they did so not on the basis of an overall expansion of a pre-existing range of commodities. During the years ca. 1125-1170 the product-mix of England's export trades totally changed.



Staple wares - slaves and animal skins - which with lesser produce - woollen cloaks and embroidered fabrics, caste and wrought metal wares and such forest products as honey or goshawks - had been the mainstay of early medieval English overseas trade, had by ca. 1170 been completely displaced. During the intervening years they had been replaced by that new commercial trilogy - wool and woollen cloth, lead and tin - which was to dominate England's export trade for the next four hundred years and beyond.

Not only had the products entering England's export trade changed, however, but also the people producing them. Manufacturers, as their products conquered domestic (1125-1145, 1155-1174 and 1188-1198) and foreign (in 1145-1155, 1166/74-1188 and 1198-1215) markets, had become progressively richer. Their commercial counterparts, whether exporting the manufacturers' wares or exchanging British silver for foreign luxuries, had similarly benefited. As both groups dispersed their new-found wealth, moreover, they transformed the urban centres within which they operated, and, at the micro-economic level of the region, provided that inflow of coin into the countryside, which by freeing the inhabitants from shackles of conducting their business on the basis of bi-lateral transactions in either labour or kind, opened up completely new opportunities for a multi-lateral intensive pattern of trade and for the introduction of increasingly specialised agricultural techniques as the peasantry were able to reorganize their output in terms of comparative advantage. Able, directly or indirectly through their lords, to gain access to investment funding, the peasantry were, moreover, soon able to realise these plans and in the process they effected a major transformation in the surrounding countryside.³⁸ In the process, however, not only their agricultural activity was affected. The new techniques, by altering the peasants' intra-annual pattern of work-time on their holdings,³⁹ provided them with new opportunities to engage in manufactory and when these were realised, through the application of mercantile capital, a new rural industrial labour force was born.

Initially during the first British silver production-cycle (1125-1155) these rural changes was largely confined to the lands of eastern England. Here a continuing supply of Scottish silver allowed the crown to pursue a "hard monetary" policy which permitted indigenes to conduct their business at constant domestic prices and to make investment decisions free from the distractions caused by monetary disorder. Then in 1158-1198 Henry II and his successors were able to finally establish throughout the kingdom these conditions of long-term price stability so desired by both medieval kings and their subjects. There was then a rapid dissemination of the new agrarian practices. Intensification in East Anglia was associated with the application of the new techniques to lands on the marches of the primary innovatory zone. The process was only stayed with the nation's involvement in the European-wide bullion crisis, occasioned by the collapse of mining production during the years ca. 1208/14-1250.

Viewed in a long-term historical perspective, however, this proved to be merely a hiatus. From ca. 1255 the European mining industry again commenced upon a new long-cycle. English kings once more were able to establish a "hard monetary" policy. This permitted their subjects to conduct a growing volume of business at constant prices and make investment decisions free from the distractions caused by monetary disorder. In these circumstances the process of agrarian change thus continued apace but in somewhat different circumstances from before.

Even at the height of the new long-cycle mining output was never able to achieve the production levels of the twelfth century. The English population was accordingly forced to reduce its coinage usage, requiring during the years 1255-1296 only some 12-15 pennies per head, or about 40 per cent of the late twelfth-century level, to conduct their business at constant prices. A new monetary order had evolved in which

³⁸Discussed in the paper "Was there really a nation-wide Malthusian crisis in late thirteenth and early fourteenth century England?" presented at the Economic History Society Conference held at Exeter, March/April 1989.

³⁹ I. Blanchard, "Introduction" in I. Blanchard (ed.), *Labour and Leisure in Historical Perspective: Thirteenth to Twentieth Century* (Stuttgart: Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte,

coin had become a largely urban phenomenon. It entered rural society for the acquisition of cash crops and returned almost immediately in payments for rents or consumer good purchases. During the late thirteenth century the village probably only experienced the use of coin for perhaps a week or two each year. For most of the year transactions were carried out, not on a barter basis or in terms of “coin substitutes,” but in terms of records maintained in the villagers’ collective memory. This was reinforced, moreover, by the use of the manorial court in its capacity as a court of record, only outstanding balances being settled in cash at the summer or Michaelmas fairs.⁴⁰ For the villager of the Middle Ages the normal experience of money was not of coin but rather money of account. Even within an urban setting or in relations between town and country the use of coin in exchange transactions was limited. Most such transactions were carried out in the form of book entries in accounts,⁴¹ which had the same force of law as contracts entered on manorial court rolls. In town or country most actions took place within groups, characterised by a level of personal knowledge, on the basis of recorded acts. Only at the interface between groups were coins used. A new monetary system had been created, which, freed from its dependence on supplies of monetary metal from a declining mining industry, was subsequently to prove totally capable of meeting the requirements of users within the extended market system already created.

In as far as this English monetary system required coin, moreover, the silver was now obtained from continental European sources, imports of that metal for the London mint generating a countervailing export-flow of commodities through that port. The capital’s merchants involved in this exchange, by engrossing an increasing proportion of the nation’s trade, were thus able to enrich themselves, and, through their disbursements influence the process of agricultural change, superimposing during the years 1255-1335 yet another regional trading pattern on those already established during the years 1040-1140 and 1155-1208/14.⁴²

Those economic structures first created in England (as in Frankia, Lotharingia, Tuscany and Piedmont-Lombardy) during the early twelfth century in response to the contemporary silver mining boom had finally, following a period of unprecedented economic growth,⁴³ come of age. By 1335 the landscape of these lands had been totally transformed. All across England’s green and pleasant land the traveller could witness the transformative effects of that “agricultural revolution” (ca. 1040-1340) which were displayed to view, in the man-made arable fields, lush meadows and coppiced woodlands as well as in the new village settlements where a peasantry now engaged in industrial as well as agrarian pursuits. During his journey he may have rested

⁴⁰ The conclusions, based on a preliminary examination of debt contracts on the court rolls of Derbyshire and Somerset manors, find striking confirmation in the independent research presented in Elaine Clark, “Debt litigation in a late medieval English vill” in J. A. Raftis, (ed.), *Pathways to Peasants* (Toronto, 1981), pp. 247-279.

⁴¹ This pattern of mercantile behaviour is currently under investigation as part of a programme of ESRC-funded research, the conclusion being based on the documents listed in the end-of-grant (HR 8205/1: 02) Report -Sources.

⁴² B. Campbell, I. A. Galloway, D. Keene and M. Murphy, *A Medieval Capital and its Grain Supply Agrarian Production and Distribution in the London Region c 1300* (London: Historical Geography Research Series, 30, 1993)

⁴³ Graeme Snooks, *Economic growth during the last millennium a quantitative perspective for the British Industrial Revolution* (Canberra: The Australian National University. Working Papers in Eco-

at an inn in one of the new “towns” which had been created during the previous three hundred years. Here he would have seen displayed for sale on the market stalls not only a wide variety and profusion of domestic produce but also a veritable cornucopia of exotic wares drawn from the four corners of the known world. He would also have seen and marvelled at those material embodiments of spiritual and secular power - the cathedrals and castles - which not only stood as a testimony to the values of his Age but also proclaimed its richness. This prevailing pattern of economic activity was now set and, in spite of the disruptive effects of the Black Death, would endure for some three hundred years until the great Central-South American specie boom again resulted in a transformation of the existing world order.

APPENDIX

Urban Case Studies (Map 2)

The East Anglian Regional Network (Phase 1: Region A1, ca.1040-1140)

Prior to the draining of the Fens during the century ca. 1140-1240 - a subject thoroughly dealt with by H. E. Hallam, *Settlement and Society. A Study of the Early Agrarian History of South Lincolnshire* (1965) - the emergence of new "urban" institutions was largely restricted to the triangular area bounded by Stamford, Peterborough and Northampton. PETERBOROUGH (No. 1) is the subject of two studies :

- E. King, "The Town of Peterborough in the Early Middle Ages",
Northamptonshire Past and Present, VI (1980/1)
C. Hart, "The Peterborough Region in the Tenth Century: A Topographical Survey", *Northamptonshire Past and Present*, VII (1981/2)

In the case of NORTHAMPTON (No.3) the literature is much more extensive:

J. H. Williams, "From 'Palace' to 'Town': Northampton and Urban Origins", *Anglo-Saxon England*, XIII (1984); "The Early Development of the Town of Northampton" in C. Dornier (ed.), *Mercian Studies* (1977) and *Saxon and Medieval Northampton* (1982)

C. A. Markham (ed.), *The Records of the Borough of Northampton*, I (1898) and J. C. Cox (ed.), *The Records of the Borough of Northampton*, II (1898)

J. H. Williams, *St Peter's Street, Northampton. Excavations 1973-1976* (1979); "Northampton", *Current Archaeology*, LXXIX (1981); "Four Small Excavations on Northampton's Medieval Defences and Elsewhere", *Northamptonshire Archaeology*, XVII (1982b) and "Northampton's Medieval Parishes", *ibidem*, XVII (1982c)

F. Williams, "Excavations at Marefair, Northampton", *ibidem*, XIV (1979)

The East Anglian Regional Network (Phase 2: Region AB1, ca. 1140-1208/14)

Subsequently, as new grazings were created out of the old wetlands with the corresponding transformation of the adjacent agricultural regimes, however, a new "urban" order was born. Overseas trading activity was displaced down-river to the east as new centres were created at Boston and KING'S LYNN (no. 6)

V. Parker, *The Making of King's Lynn* (1971)

D. Owen (ed.), *The Making of King's Lynn* (BAR SEH, New Series, IX 1984)

E. M. Carus-Wilson, "The Medieval Trade of the Ports of the Wash", *Medieval Archaeology*, VI-VII (1962-3) and W. A. Pantin, "The Merchants' Houses and Warehouses of King's Lynn", *ibidem*.

H. Clarke and A. Carter, *Excavations in King's Lynn, 1963-1970* (London: Society of Medieval Archaeology, Monograph Series No.7. 1977)

The progress of the excavations should be followed in the reports in *Medieval Archaeology*, VIII (1964), p.266; IX (1965), p.196; X (1966), p.199; XI (1967), p.294; XII (1968), p.184; XIII (1969), p.266 and XIV (1970), p.183.

Old established centres at Lincoln and Norwich were transformed. On NORWICH (No 5) see the results of recent excavations reported in:

"Excavations in Norwich 1971-8", *East Anglian Archaeology*, XV (1982)

"A Waterfront Excavation at White Friars Street Carpark", *East Anglian Archaeology*, XVII (1983)

"Excavations at St Martin-at-Palace Plain, Norwich 1981" by B. Ayres, *East Anglian Archaeology*, XXVII (1988)

"Eighteen Centuries of Pottery in Norwich", *East Anglian Archaeology*, XIII (1981).

Similar materials also exist in relation to LINCOLN (No. 8) where a major series of excavations were undertaken in 1972-7 which added new dimensions to Hill's classic study based on documentary sources:

J. W. F. Hill, *Medieval Lincoln* (1948)

C. Colyer, "Excavations at Lincoln: First Interim Report. The Western Defences of the Lower Town. 1970-2", *Antiquaries Journal*, LV (1975)

M. J. Jones & C. Colyer, "Excavations at Lincoln: Second Interim. Excavations in the Lower Town. 1972-8.", *Antiquaries Journal*, LIX (1979)

M. J. Jones, "Excavations at Lincoln: Third Interim Report. Sites Outside of the Walled City, 1972-1977", *Antiquaries Journal*, LXI (1981)

D. Pering, "Early Medieval Occupation at Flaxengate" and R. H. Jones, "Medieval Stone Houses at Flaxengate" in *The Archaeology of Lincoln*, IX/1 (1981)

**Canterbury (No.4) and the Kentish Regional Network
(Phase 1: Region A2, ca. 1040-1140)**

W. Urry, *Canterbury under the Angevin Kings* (1967)

T. Tatton-Brown, "Canterbury's urban topography: some recent work" in P. Riden (ed.), *The Medieval Town in Britain: Gregynog Seminars in Local History* (1980)

S. S. Frere, S. Stow & P. Benett, *Excavations of the Roman and Medieval Defences of Canterbury* (Canterbury Archaeological Trust: The Archaeology of Canterbury, vol.2. 1983)

S.S. Frere & S. Stow, *Excavations in the St George Street and Burgate Street Area* (Canterbury Archaeological Trust: The Archaeology of Canterbury, vol.7. 1983)

**The Midlands and the North-Eastern Regional Networks
(Phase 2: Region B, ca. 1140-1208/14)**

There is a singular lack of archaeological evidence concerning the evolution in the period ca 1140-1240 of the new "urban" centres in the East Midlands and Yorkshire (Region B2) though representative of changes here is RIPON (No.13):

W. MacKay, "The Development of Medieval Ripon", *Yorkshire Archaeological Journal*, LIV (1982)

This study may be supplemented by reference to studies of YORK (No. 12)

R. Hall, *The Viking Dig: Excavations at Coppergate, York* (1984) and by the same author *Viking Age York and the North* (Council of British Archaeology, Report 27. 1978); A. P. Smith, *Scandinavian York* (1975)

Much more information is available concerning the developments taking place in the West Midlands (Region B1, Nos. 9-10):

R. H. Hilton, "The Small Town and Urbanization: Evesham in the Middle Ages", *Midland History*, VII (1982).

E. M. Carus-Wilson, "The First Half-Century of the Borough of Stratford-upon-Avon", *Economic History Review*, Second Series, XVIII (1965)

These may be supplemented by reference to WORCESTER (No.11) where recent excavations have begun to reveal something of the towns's development at this time.

M. Carver (ed.), *Medieval Worcester* (Worcester Archaeological Society, 7. 1980)

**Southern, Western (and Welsh) and Northern Networks
(Phase 3: Regions C, C1-4, ca. 1255-1335)**

Finally after ca. 1255 the new forms began to emerge in the southern, western and northern counties, a considerable body of both archaeological and documentary evidence illustrating the process of change in the four main regions.

The Essex-Suffolk Enclave (Region C)

Colchester (No.19)

- P. Crummy, *Aspects of Anglo-Saxon and Norman Colchester* (CBA Research Report, No.1-Colchester Archaeological Report No.1. 1983)
R. H. Britnall, *Growth and Decline in Colchester, 1300-1525* (1986), chapter 1, pp. 9-12.
P. Crummy, *Excavations at Lion Walk, Balkerne Lane and Middleborough in Colchester* (Colchester Archaeological Report No.2. 1983)

LONDON (no. 20) and Middlesex (Region C1)

(a) General Introductory Studies.

- T. Tatton-Brown, "The Topography of Anglo-Saxon London", *Antiquity*, LX (1986)
A. Vince, *Saxon London* (1990)
J. Clerk, *Saxon and Norman London* (HMSO for Museum of London, 1989)
C. Brooke and G. Keir, *London 800-1216: The Shaping of a City* (1975)
M. D. Lobel (ed.), *The City of London* (OUP: Historic Towns Trust, 1989)
G. Rosser, *Medieval Westminster 1200-1540* (1989), chapter 1
K. McDonnell, *Medieval London Suburbs* (1978)

(b) Social and Political Structure.

- F. M. Stenton, *Norman London* (1934) with a translation of William fitz Stephen's description by H. E. Butler and a map of London by M. B. Honeybourne, revised edition in G. Barraclough (ed.), *Social Life in Early England* (1960)
G. A. Williams, *Medieval London from Commune to Capital* (1963)
W. de G. Birch (ed.), *Historical Charters and Constitutional Documents of the City of London* (1887)
M Bateson, "A London Munciple Collection of the Reign of John", *English Historical Review*, XVII (1912)

(c) Aspects of Urban Archaeology

J. Schofield, A. Dyson et alii (eds.), *Archaeology of the City of London. Recent Discoveries by the Department of Urban Archaeology, Museum of London* (City of London Archaeological Trust, 1980)

V. Horsman, C. & G. Milne, *Aspects of Saxo-Norman London. I, Building and Street Development* (London and Middlesex Archaeological Society 11-2, 1989-90)

G. & C. Milne, *Medieval Waterfront Development at Trig Lane, London* (London and Middlesex Archaeological Society, Special Paper, No.5. 1983)

(d) "Feeding the City" - Project

Derek Keene, "A New Study of London Before the Great Fire", *Urban History Year Book*, 1984 and "Medieval London and its Region", *The London Journal*, XIV (1989); James G. Galloway & Margaret Murphy, "Feeding the City: London and its Agrarian Hinterland", *The London Journal*, XVI (1991); Bruce M.S. Campbell, James G. Galloway & Margaret Murphy, "Rural Land-Use in the Metropolitan Hinterland, 1270-1339: The Evidence of the *Inquisitiones Post Mortem*", *Agricultural History Review*, XL (1992); Bruce M.S. Campbell, James G. Galloway, Derek Keene and Margaret Murphy, *A Medieval Capital and its Grain Supply Agrarian Production and Distribution in the London Region c 1300* (London: Historical Geography Research Series, 30. 1993)

The Itchin-Avon Basin (Region C2)

Winchester (No.14)

The work of the Winchester Survey which will ultimately be published in ten volumes will provide the most comprehensive study of an English medieval town available. To date only two volumes have appeared WS1 and WS2/i-ii which are concerned with the topography of the city as revealed in documentary sources.

WS1. F. Barlow, M. Biddle et al., *Winchester in the Early Middle Ages. An Edition and Discussion of the Winton Domesday* (Oxford, 1976)

WS2/1-2. D. Keene, *Survey of Medieval Winchester* (Oxford, 1985)

The definitive reports on the excavations in the city will have to await the publication of WS3-10 but in the meantime reference should be made to the interim reports.

M Biddle, Interim Reports on the Winchester Excavations, 1961-1971 in *Arch.Journ.* and *Antiquaries Journ.* as follows:

I Interim (1961 season), *Arch. Journ.*, 119 (1962).
II-X Interim (1962 & 3-1971), *Ant. Journ.*, 45-50,
52, 55 (1964-70, 1972, 1975)

To set these studies in historical perspective reference should also be made to

M. Biddle, "The development of the Anglo-Saxon town" in *Topografia Urbana e Vita Cittadina Sull'atto Medioeva in Occidente* (Spoleto, 1973).

-----,"Winchester: the development of an early capital" in H H Jahnkuhn et al., (eds.), *Vor- und Frühformen der europäischen Stadt in Mittelalter* (Gottingen, 1972)

J. Z. Titow, "The decline of the fair of St Giles, Winchester, in the thirteenth and fourteenth centuries" *Nottingham Medieval Studies*, XXXI (1987)

Southampton (No.15)

C. Platt, *Medieval Southampton: The Port and Trading Community, AD. 1000-1600* (1973)

P. V. Addyman & D. H. Hill, "Saxon Southampton: A Review of the Evidence", *Proceedings of the Hampshire Field Club*, XXV-XXVI (1968-9)

P. Holdsworth, *Excavations at Melbourne Street, Southampton 1971-6* (Council of British Archaeology, Research Report No.33. 1981)

C. Platt & R. Coleman-Smith, *Excavations in Medieval Southampton*, 2 vols (1975)

J. Walker, " Excavations in Medieval Tenements on the Quilter's Vault Site in Southampton", *Proceedings of the Hampshire Field Club*, XXXV (1979)

J. Bourdillion, "Town Life and Animal Husbandry in the Southampton Area", *Proceedings of the Hampshire Field Club*, XXXVI (1980)

Salisbury (No. 16)

A. Borthwick and J. Chandler, *Our Chequered Past: The Archaeology of Salisbury* (County Museum Service, 1984)

D. Stroud, "The site of the borough at Old Sarum 1066-1226: an examination of some documentary evidence", *Wiltshire Archaeological and Natural History Magazine*, LXXX (1986)

The Severn-Avon Basin and the Welsh Marches (Region C3)

Gloucester (No.17)

H R Hurst and L F Pitts, *Gloucester: The Roman and Later Defences* (Gloucester Archaeological Reports 2. 1985)

Hereford (no.18)

R. Shoesmith, *Excavations at Castle Green* (CBA Research Reports 36 - Hereford City Excavations 1. 1983); *Excavations on and close to the defences* (CBA Research Reports 46 - Hereford City Excavations 2. 1984)

and *The Finds* (CBA Research Reports 56 - Hereford City Excavations 2. 1985)

Welsh Marches

I. Soulsby, *The Towns of Medieval Wales* (1983)

The Northern English Counties (Region C4)

The pre-medieval order prevailing in the borders was transformed during the years ca.1133-1157 and 1157-1215 as a series of major mining booms, which raised the region to the forefront of European silver production, wrought a radical change in both the political and economic life of the area. During the first mining boom the whole area was unified under the control of the Scottish crown as David I created a vast "English Empire", encompassing under his direct control and that of his son Cumberland, Northumberland and Westmoreland and creating "client-states" in Durham and Lancashire. Within the bounds of this "empire", extending from Lothian to the English lands beyond, moreover, economic life was transformed as in response to the mining boom new supply networks were formed and economic activity intensified:

I. Blanchard, "Lothian and beyond: the economy of the 'English empire' of David I" in J. Hatcher and R. H. Britnell (eds.), *Progress and Problems in Medieval England: Essays in Honour of Edward Miller* (Cambridge, 1996)

With the subsequent re-annexation of these territories by Henry II in 1157, however, this whole system collapsed as the second mining boom was played out during the years to 1215 in a purely English context. In Scotland the pattern of intensive development of the early twelfth century gave way to extensive colonization on the frontier in conditions of endemic monetary debasement, establishing a pattern of east coast urban development.

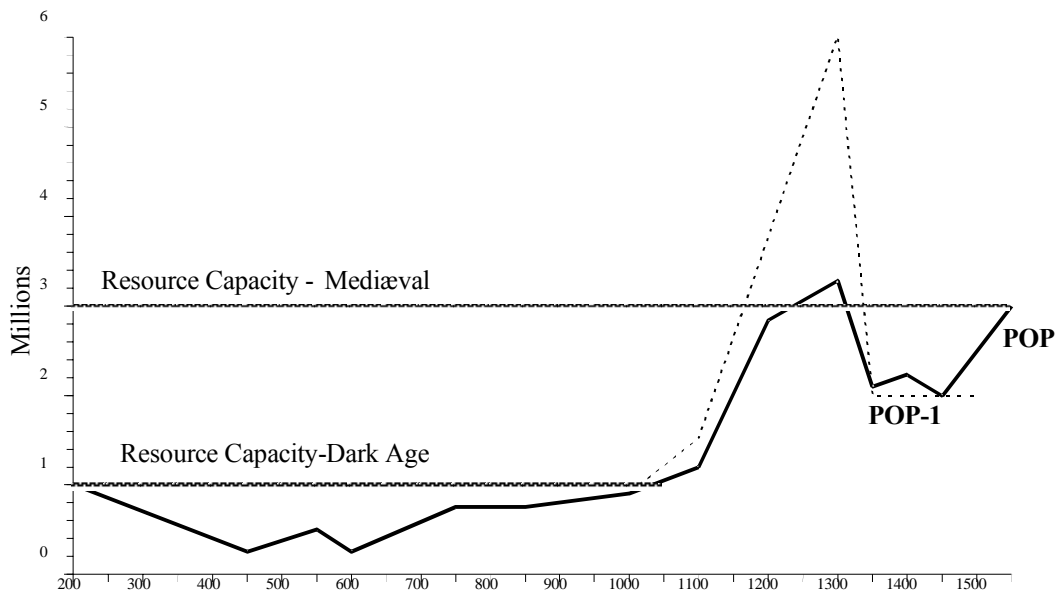
During the years 1133-1215 as a result of successive mining booms a new urban order had emerged in the English North. This subsequently underwent a further process of change as agricultural forms introduced into Durham and Northumberland in the late twelfth century were extended to the Borders after ca. 1250, with the resultant transformation of urban life in the region. Unfortunately but little is known of this process but some insights can be gained from a study of Carlisle and the Cumbrian economy:

A. J. L. Winchester, *Landscape and Society in Medieval Cumbria* (Edinburgh, 1987)

H. Summerson, "The Place of Carlisle in the Commerce of Northern England in the Thirteenth Century", in P. R. Coss & S. D. Lloyd (eds.), *Thirteenth Century England*, I (1986)

Estimates of English Mediæval Population, 1086-1350

(figure 2)



While fairly complete population census did not begin until 1801, plausible estimates of population by E.A. Wrigley and R.S. Schofield, based upon demographic data contained within parish records, are available back to 1541.⁴⁴ Before this time only approximate estimates are available on the basis of widely scattered data. Prior to Domesday Book (1086) population estimates can be little more than inspired guesses. Such estimates, based on similar assumptions, for the Roman and immediately post-Roman province of Britannia may be compared, however, with the latest work of archaeologists and anthropologists on "Dark Age" England and suggest that a Roman population level of at least one million at the end of the second century was not thereafter again attained until the eleventh century, the English population fluctuating during the intervening years at between 250,000 and 750,000.⁴⁵

Only in 1086 is relatively reliable direct information for the first time available from Domesday Book. In this case the translation of the raw data (listing some 268,984 tenants) into population statistics requires the estimation of the tenant population for the counties not included in the Great Survey.⁴⁶ It also necessitates the use of a household multiplier, originally estimated at 3.6 and subsequently raised to 5.5 so as to yield a population figure of between 1.1-1.53 million.⁴⁷ The next available source

⁴⁴ E.A. Wrigley and R.S. Schofield, *The Population of England 1541-1871. A Reconstruction* (London, 1981).

⁴⁵ L. Alcock, *Arthur's Britain. History and Archaeology A.D. 367-634* (Harmondsworth, 1990), pp. 310-11; B. Wailes, "Plough and population in temperate Europe" in B. Spooner (ed.), *Population Growth: Anthropological Implications* (Cambridge, Mass., 1972), pp. 154-180.

⁴⁶ This involves some 6,872 tenants for the northern counties not included in Domesday Book

for the direct measurement of the total English population is the poll tax of 1377. This yields a figure for the over-14 population of 1.62 million. About these two pegs, Domesday Book and the Poll Tax, have been constructed various models of the dynamics of population change in the period 1086-1350. There is might be described as the "minimalist" argument, propounded by Professor Russell. This suggests that an allowance of 35% should be made for the under-14 population in 1377. An allowance of 40% should also be made for aggregative mortality directly attributable to the Black Death and the epidemics of the 1360s and 1370s. This gives a figure for 1377 of 2.235 million and a pre-plague population for England of some 3.2 million.⁴⁸ It is then assumed that population changes between 1086-1340 assumed the form of a linear trend, rising steadily from ca. 1.1 million to 3.2 million. Since 1966, this view has been largely displaced, however, by that of Professor Postan. This may be termed the "maximalist" variant.⁴⁹ This re-estimation involved raising the 1377 population figure to some 3.0 million by an unsubstantiated assumption of a 25% evasion rate and by increasing the number of children in the population to 40-45%. It was then proposed that the mortality attributable to the Black Death alone was about a third. It was further assumed that the combined mortality from other fourteenth-century epidemics was at least half that of 1348-9, aggregate casualties of all epidemics amounting to 50 per cent. Total pre-plague population, accordingly, was raised to about 6 million. Such a view gained rapid acceptance and by 1977 had become the conventional orthodoxy,⁵⁰ although latterly there has been a tendency to retreat from such a high figure - and not without reason. The elements of the assumptive base of the above argument are to a degree mutually inconsistent. To have children comprising in 1377 40-45% of the total population implies a very high contemporary birth rate but if there had been such a marked post-plague recovery of population then a 50% decline in total population between 1347 and 1377 is unlikely. Similarly if there was zero population growth between plagues then children could not comprise 40-45% of the population in 1377. Either assumption is sustainable on its own but not both together. Thus the pre-plague population of necessity should be reduced to about 4.1-5.5 million. If the somewhat arbitrary 25% evasion rate adopted by Professor Postan is also abandoned the figure is reduced still further to 3.4-4.5 or little more than the original estimates of Professor Russell which have been adopted here in series-POP. Perhaps the time has come to continue that retreat from the position of 1966 which, in treating demographic change as the major determinant variable of economic change, was setting an agenda for the economic history not only of medieval but also early modern England.

As will have been appreciated, in this lecture an alternative approach to the process of demographic change is presented. In this it is treated as a dependent rather than determinant variable, the population undergoing successive phases of adjustment (some times imperfect) in relation to changing regional and national levels of productive capacity. Such an approach is certainly not inconsistent with the independently derived data presented in Professor Russell's time-series, similarly suggesting that the English population probably increased from ca. 1.2 million to 3.2 million between

⁴⁸ J. C. Russell, *British Medieval Population* (Albuquerque, New Mexico, 1948)

⁴⁹ M. M. Postan, "Medieval Agrarian Society in its Prime" in M. M. Postan (ed.), *The Cambridge Economic History of Europe*, vol. I, *The Agrarian Life of the Middle Ages* (Cambridge, 2nd edition, 1966), pp. 561-2.

⁵⁰ J. Hatcher, *Plague, Population and the English Economy, 1348-1530* (London, 1977) represented in

1086-1350.⁵¹ It also provides, moreover, an explanation of the changing spatial distribution of that population over time. In the eleventh century the English population, numbering a million or so, was roughly equally distributed between the three principal English regions (A-C in map 2).⁵² Two hundred and fifty later the situation was very different with slightly less than 60% of the population being concentrated in the agriculturally-advanced sub-regions (A1-2, AB1 in map 2) of eastern and south-eastern England.

⁵¹ By base point weighting of the series for the growth in tenant numbers, recorded in H.E.Hallam, "Population Movements in England, 1086-1350 : Postscript (1983)" in H.E.Hallam (ed.), *The Agrarian History of England and Wales*, vol. II, *1042-1350* (Cambridge, 1988), pp. 536-593, in terms of the spatial distribution of tenancies recorded in Domesday Book, recorded in H. C. Darby, *The Domesday Geography of England* (Cambridge, 6 vols., 1952-1967) and summarised in *Domesday England* (Cambridge, 1977), p.90, a similar result is achieved.

⁵² Ibidem, pp. 513-4, with the sub-regions A1-2 already displaying slightly above average population