Royalty, Religion and Rust!

Historical Metallurgy Society
Spring Meeting and AGM
4th-5th of June 2011

Book of Abstracts

Programme

Saturday

9:00-10:00	***Registration with tea/coffee***	
10:00-10:30	Niklas Schulze	Copper bell casting in pre-hispanic Mexico
10:30-11:00	Ana Maria Navas	Colonization and metallurgy in the 18th century Jesuit missions of the Middle Orinoco Basin, Venezuela
11:00-11:30	***Coffee Break***	
11:30-12:00	Paul Rondelez	13th century Cistercian metalworking at Aghmanister, Co.Cork (Ireland)
12:00-12:30	Peter Halkon	Iron, Myth and Magic – Perceptions of smiths and metal workers through cultural evidence from Britain and beyond
12:30- 1:30	***Lunch***	
1:30-2:00	HMS Annual General Meeting	
2:30-3:30	Tour of Rievaulx Abbey	
3:30-5:00	Free time at Rievaulx (Trip to Bilsdale)	
6:00-onwards	***Conference Dinner at Feathers Hotel***	

Sunday

8:40-9:00	***Registration***	
9:00-9:30	Tim Young	Christianity, technology transfer and iron in pre-Viking early medieval Ireland
9:30-10:00	Chris Witney-Lagen	Of Belief and Brooches: The Symbolic Function of Pewter Dress Accessories in Early Medieval Britain
10:00-10:30	Stephen Sherlock	Anglo-Saxon gold: a Royal Burial at Street House
10:30-11:00	***Coffee Break***	
11:00-11:30	Roy Andrews	Iron working in medieval castles? A Yorkshire perspective.
11:30-12:00	Barry Cosham	Smithying in ruins: the continued use of the O'Conor Roe castle site at Tulsk, Co. Roscommon, Ireland
12:00- 1:30	***Lunch***	
1:30-2:00	Tour of Helmsley Castle	
2:00-onwards	Free time at Helmsley Castle	

Copper bell casting in pre-hispanic Mexico

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The Templo Mayor of Tenochtitlan (today's Mexico City) was the main temple of the Aztec empire, conquered and destroyed by Hernán Cortés in 1521. In offerings found in the ruins of this religious and political centre, more than 3000 copper alloy bells – together with a large spectrum of other materials – were found during more than three decades of archaeological excavations.

In spite of these metal finds, the centre of Mexico was not considered a metal object producing area until now, partly due to the fact that archaeological evidence of production processes is completely absent. However, recent research on the morphology and composition of the Templo Mayor bells points tentatively towards local production.

The current investigation takes a critical look at the lost-wax bell production process, evaluating ethnohistorical, experimental and archaeological evidence from central Mexico and surrounding areas, in order to assess the possibilities of archaeologically identifying the location of production. Furthermore, ethnohistorical information allows taking a glimpse at the organization of the metallurgical workshops and the mechanisms of their supply with raw materials.

Colonization and metallurgy in the 18th century Jesuit missions of the Middle Orinoco Basin, Venezuela

Ana María Navas Méndez, F. Scaramelli, A. Di Prinzio, K. Scaramelli
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In the first part of the 18th century the Jesuit missionaries, located in Santa Fe, persisted in the penetration of the Orinoco River from the West in order to set up communication between the missions of the Andes, Orinoco and Trinidad. To achieve this goal, they established a series of *reducciones* with Indians of different nations. The missionaries attracted several indigenous groups by promising protection against the slave trade and by offering European goods such as metal tools. The missionary project in this area contemplated the civilization of the indigenous peoples through the imposition of Christianity and the conditioning of the region for future settlement and economic extraction. In this context the military and religious strategies were somewhat effective, but the significance of the introduction of metal artifacts, such as tools or weaponry, in the dynamics of the missions is still unknown. This paper explores the role of metallurgy in the Jesuit missions of the Middle Orinoco River during the 18th century. Previous archaeological surveys located the site Pueblo de los Españoles, mentioned in the literature of the missionaries as Nuestra Señora de los Ángeles de Pararuma founded in 1734. The archaeological evidence and historical documents are used to reconstruct the process of production and consumption of the foreign technology, the nature of the interaction in a multiethnic colonial context and its historical consequences for the native people. The evidence from the blacksmith shop of the mission, composed of iron bars, nails, slag, knives, machetes, and the like, was analyzed by archaeological and metallurgical methodologies to rebuild the "operational sequence" of iron production. In a wider sense, this paper is a contribution to the comprehension of the place of foreign manufactures and technologies in the colonial experience of the indigenous groups living in the region.

13th century Cistercian metalworking at Aghmanister, Co.Cork (Ireland)

Paul Rondelez, PhD researcher,
University College Cork

Excavations of a Cistercian monastery known as Sancta Maria de Fonte Vivo at Aghmanister, Timoleague (Co. Cork, Ireland), founded in 1172, have produced a ironworking area within the walls of the main building. Other parts of the monastery yielded more limited evidence of metalworking, but which, in at least one area, also comprised copper working residues. The date of these activities center around the third quarter of the 13th century, which corresponds with the period just before or after a new Cistercian abbey of the same name was built some 3 km away. It is likely that the original monastic buildings acquired a more utilitarian function after the establishment of the new monastery.

The finds from the main area include numerous iron objects and some possible bar fragments. The same area also yielded some 150 kg of slag of varying types, a substantial amount of which showing flow structure. Only a few SHC's were recovered. Interestingly, at least two types of 'technical ceramics' were recovered, provisionally identified as tuyere fragments and pieces of vitrified hearth lining with blowholes. Some of the features relating to the metalworking had distinct internal stratification. Other features found were a metalworking hearth surrounded by a semi-circular clay rim next to a possible anvil emplacement.

The layout of the different features suggest a spatial division of the metalworking activities. A reconstruction of these activities will be attemped by spatial distribution analysis of the different slag, 'technical ceramics' and iron object types. This will be complemented with an analysis of the microresidues (hammerscale, etc) sampled from the various deposits within the features.

Iron, Myth and Magic – Perceptions of smiths and metal workers through cultural evidence from Britain and beyond

Peter Halkon
Department of History, University of Hull

Several people have requested a repeat performance of this paper, first presented at the *World of Iron conference* held in London in 2009 and this presentation will be an updated version in the light of subsequent research. In many societies around the world, the role of the iron smelter and blacksmith has been perceived as special or magical in some way. In different regions of Africa, for example, those involved in the production of iron have been seen as marginal to society or central to it. Iron production has been closely related to religious cults and traditions. Through past and present anthropological observation and oral tradition, we know in some detail how iron workers fitted in to their society or not. Is it possible to see to how smiths and other metal workers were perceived where such traditions have been largely forgotten? With particular reference to Britain and Scandinavia from the Iron Age to the early modern period, burials of smiths from Iron Age Britain combine with the accounts of classical writers to suggest that they were held in high regard. The artefacts particularly the swords, often associated with magical powers, provide evidence of their great craftsmanship.

The North Yorkshire area provides a fitting venue for this paper, as in the wider region there is evidence for a Roman smith cult represented by a concentration of pots decorated with smith's tools and the face of the god Vulcan. In the Viking Age the exploits of Sigurd the Norse hero and dragon slayer, wielder of a magic sword forged by the evil smith Regin are depicted on a remarkable series of stone scuptures, also clustered in North Yorkshire.

Christianity, technology transfer and iron in pre-Viking early medieval Ireland

Tim Young,
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The paper will explore the advent of innovative iron-working techniques in early medieval Ireland within the context of the more general flux in learning, language, literacy, art and technology which accompanied the spread of Christianity to and from Ireland.

Iron Age Ireland appears to have been largely isolated from the trade networks of the Roman Empire, but from the 5th century onwards there was a great expansion of contact with the late antique world. Christian missions sent from Gaul were probably active in the south of the island in the early 5th century, stimulating the growth of Christianity which had probably arrived earlier through interaction with Britain (as happened later in the 5th century with Patrick further north). Trade with SW Europe and the Mediterranean area is indicated by the widespread distribution of imported pottery and glass. From the mid-6th century onwards Irish clerics were travelling widely in Europe (particularly exemplified by the mission of Columbanus to the Franks in the period AD 580-615). Recorded interactions of Irish monasticism with metalworkers in Europe include that with Eligius (circa AD 588-660), a Merovingian goldsmith, who founded monasteries of Irish style.

Against this background, residues from ironworking indicate a sudden divergence of technology and practice from that of Britain, particularly in the use of ceramic tuyères and in the production of slag in the form of extremely large plano-convex cakes. Some of the iron products of this period, particularly large brazed sheet-iron hand bells, indicate a very high degree of technical competence. Although there are too few sites with well-dated slag assemblages from this period to be certain of the precise timing, it is clear that these innovations were in place by the mid-7th century and possibly earlier; a period which would parallel, for instance, the widespread adoption of both

horizontal and vertical water wheels, which are widely believed to have been derived from continental Europe.

An association of early monasteries with iron working is also indicated by written sources. The 'Tripartite Life of Patrick', compiled in the 10th century from much earlier material, makes many references to the use of bells and names the three smiths (including a bell-maker) in Patrick's entourage. A late medieval life of Fanahan (early 7th century) of Bri Gobhann explains the monastic toponym (Hill of the Smiths) as deriving from the seven smiths who forged seven sickles for the mortification of the saint. Intriguingly, the estate of Bri Gobhann actually abuts Gortnahown, an excavated site with evidence for latest 6th to mid-7th century production of small brazed iron bells (the earliest such evidence in Ireland), using a technology identical to that employed at the monastic site of Clonfad for the production of ecclesiastical handbells in the mid-7th to 8th centuries.

The novel techniques in iron-working may therefore be seen as being introduced during a period of fertile interaction with continental Europe, particularly the Frankish areas, during the 5th and 6th centuries. Iron working developed into a major activity at both secular and monastic locations, but the monasteries provided a particular focus as centres of production of religious metalwork, as the foci of economically-active large estates, often with royal connections, and in some cases eventually as catalysts for the development of entrepreneurial proto-urban settlements.

Of Belief and Brooches: The Symbolic Function of Pewter Dress Accessories in Early Medieval Britain

Chris Witney-Lagen
Institute of Archaeology, University College of London

Although largely forgotten today, pewter occupied both the ecclesiastical and secular spheres of Britain in the 10th-13th centuries, a period of intense political and social change. The Church formally approved its use for plate in parishes that could not afford, or chose not to use, gold or silver. Such was pewter's popularity that Theophilus describes in detail the manufacturing technique of a pewter cruet. In Britain, the Cistercians became major consumers of pewter. Pewter patens and chalices have been found in the tombs of priests symbolising their duties in life. This appreciation of pewter was echoed in secular urban environments, where it was used for dress accessories and small domestic items. Although the uses and styles of later medieval pilgrim's badges have been well studied, less recognised is a variety of Anglo-Scandinavian and Anglo-Norman brooches, beads and finger rings dating from the 10th to the 11th centuries. Through their motifs and materials, dress accessories served as public signals reflecting the social status, identity and beliefs of their wearers. Many of these pewter dress accessories imitate forms and motifs that appear on gold and silver elite jewellery, suggesting their use by an aspirational non-elite, or perhaps by children. The Museum of London holds a large collection of early medieval pewter dress accessories. Many of these feature religious or abstract motifs that functioned as statements of belief, Christian or otherwise, as magical talismans, or as statements of social identity during the complex political struggle between the Saxons, Scandinavians, and Normans in the 10th-11th centuries. This paper explores the use of pewter in early medieval Britain and the interplay between pewter dress accessories and the symbolic messages they convey.

Smithying in ruins: the continued use of the O'Conor Roe castle site at Tulsk, Co. Roscommon, Ireland

Barry Cosham

The O'Conor Roe site at Tulsk was excavated by Niall Brady on behalf of the Discovery Programme from 2004 until 2009. Initially investigated as a site with potential for addressing the issue of the continuity of ringforts in the landscape, the site proved to be of especially high status. Although deposits potentially dating back to the Mesolithic were discovered, the site was particularly significant after 1385 when the O'Conor dynasty split and in 1406 when it is likely that the tower house castle was first constructed. Clearly defined areas of iron smithing have now been identified against the northern wall of the then ruinous castle tying together a continuity of occupation and use from prehistoric times through to Elizabethan garrisoning. However, the metalworking evidence shows no evidence for high status production, a harsh juxtaposition to the previously venerated site. The presence of substantial smithing hearth bases and absence of smelting waste in a landscape where smelting would not be unexpected suggests domestic production and repair. Environmental analysis has hinted that domestic activities were conducted away from the castle at the peak of its prominence and, while 'everyday' metalworking would not be alien to a high status site, it may also have been located off-site. Why then was a position against the castle walls favoured following the final collapse of the castle and the later medieval hall use of the building materials? Or could the significance of the high status site also tumble within a few decades? Final radiocarbon dates are still awaited but the connection of the metalworking to the later garrisoning by Bingham, Elizabeth I's Governor of Connacht, cannot be ruled out.

Information for the Tour of

Rievaulx Abbey

Chronology of Rievaulx Abbey and Phases of Ironworking

The First Monastic Phase (Figs 1 and 3)

In this phase 'bloomery' sites were scattered around the valley and operated in rotation with possibly up to 15-20 locations so that each bloomery site was re-occupied after 15-20 years allowing the adjacent woodland to regenerate. By the end of the this Phase the furnaces were water-powered and producing cast iron

- 1131 Founding of Rievaulx, First Grant of land by Walter L'Espec of Helmsley Castle (Fig 1) .
- 1138 Battle of the Standard, at Northallerton, 10 miles away (England won)
- 1145 Second Grant of Land by L'Espec, of Bilsdale that includes the ore field.
- 1147-67 Abbot Aelred
- 1167 640 monks and lay brothers
- 1276 The Great Murrain, sheep disease
- 1280 Lawsuit over theft of Kirkham timber.
- 1301 Lay Subsidy
- 1322 Battle of Byland - Bilsdale and Hambletons 'stripped bare', Rievaulx (& Byland) sacked (Scotland won).

The Second Monastic Phase

In this Phase it is thought that the industry was concentrated at two sites, The Grange and Timberholme, both sites powered by the main river, the Seph. The end date is hypothetical

- 1348 The Black Death
- 1350's Break up of Granges and leasing out of land
- 1500 Nothing in Particular

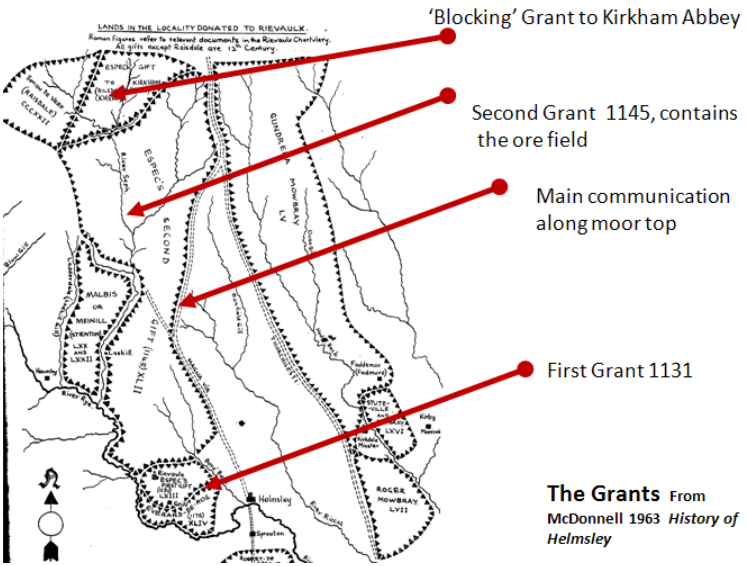


Figure 1 Grants of land at the founding of Rievaulx Abbey

Figure 2 Aerial photograph of Rievaulx Abbey showing locations of components of the blast furnace, star is proposed location of the furnace (photo author)

The Dissolution Phase (Fig 3)

This Phase has detailed documentation from the dissolution documents and purchase of the estate by the Earl of Rutland. The furnace is at Timberhome and the forges at Rievaulx. It ends with the move of the furnace to Rievaulx itself

- 1500 Nothing in particular
- 1538 The Dissolution
- 1575 Laskill furnace 'blown out'

The Blast Furnace Phase (Figs 2-4)

The final phase of iron production, a fully integrated blast furnace and finery, and chaferies.

- 1576 Blast Furnace at Rievaulx
- 1591/2 Output Data
- 1640-51 Civil War
- 1644 Siege of Helmsley Castle
- 1647 Last Reference to the Blast furnace

Dr Gerry McDonnell May 2011

Further Details at:

http://archmetals.org.uk/rievaulx.html

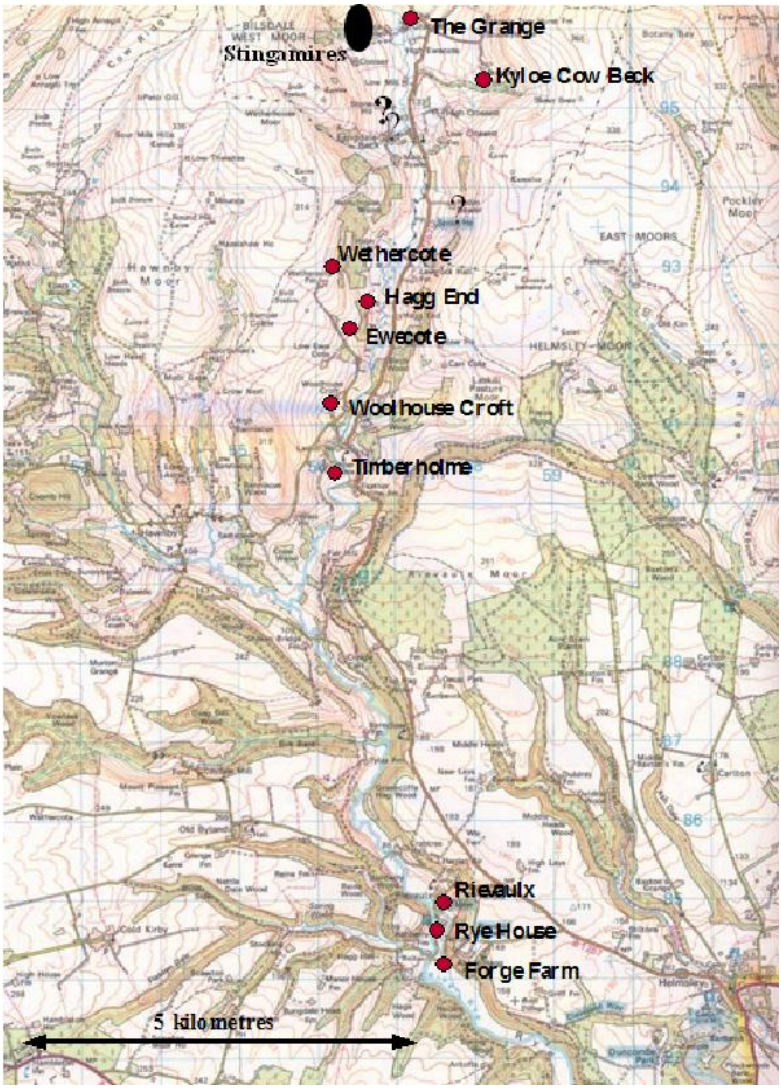


Figure 3 Location of iron making sites and dissolution and later forges (Rye house and Forge Farm)

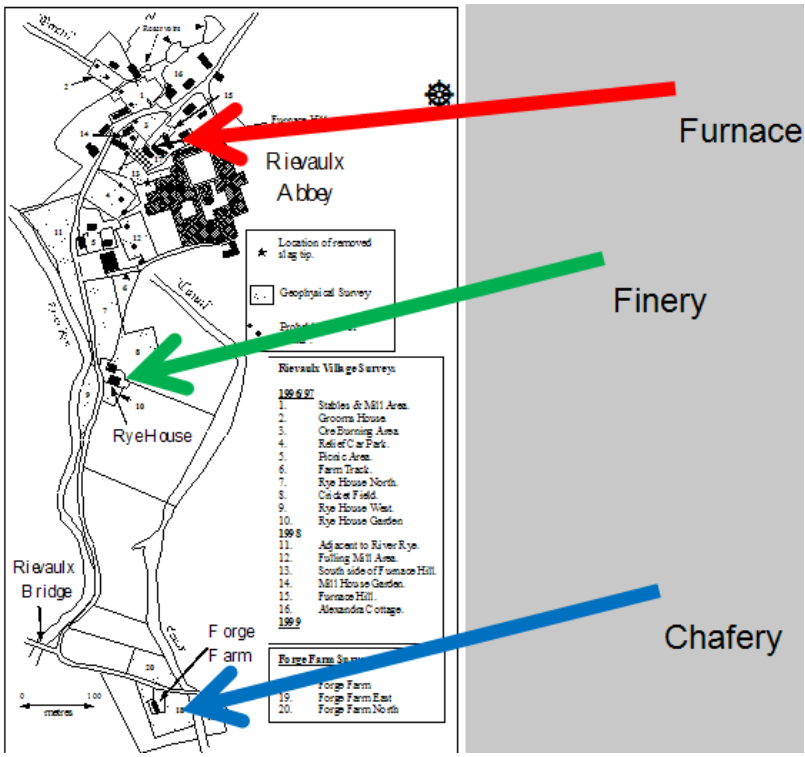
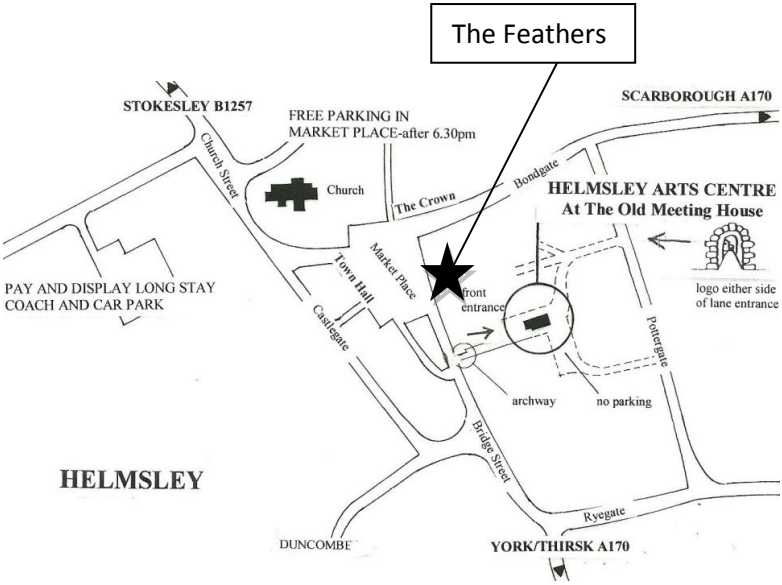
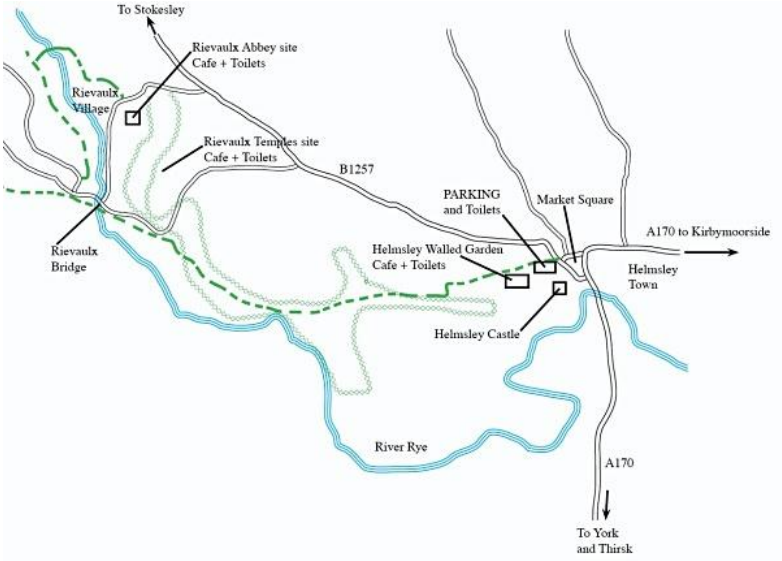


Figure 4 Rievaulx Abbey showing location of the furnace, finery and chafery. Black squares show locations of geophysical surveys (Plan by Rob Vernon)


The Feathers
STOKESLEY B1257
FREE PARKING IN
MARKET PLACE-after 6.30pm
SCARBOROUGH A170
Church Street
Church
The Crown
Bondgate
HELMSLEY ARTS CENTRE
At The Old Meeting House
Market Place
Town Hall
front
entrance
logo either side
of lane entrance
PAY AND DISPLAY LONG STAY
COACH AND CAR PARK
Castlegate
Pottergate
archway
no parking
Bridge Street
HELMSLEY
Ryegate
DUNCOMBE
YORK/THIRSK A170


To Stokesley
Rievaulx Abbey site
Cafe + Toilets
Rievaulx
Village
Rievaulx Temples site
Cafe + Toilets
B1257
PARKING
and Toilets
Market Square
A170 to Kirbymoorside
Rievaulx
Bridge
Helmsley Walled Garden
Cafe + Toilets
Helmsley
Town
Helmsley Castle
River Rye
A170
To York
and Thirsk