The Dating of Medieval English Private Charters of the Twelfth and Thirteenth Centuries

by Michael Gervers

In 1922, F.M. Stenton published one of the most informative and concise introductions to English private charters of the post Conquest period that has ever been written.[1] His contexts were the largely twelfth- and thirteenth-century charters of five Gilbertine houses in Lincolnshire, preserved in early fifteenth-century transcripts on the Exchequer Memoranda Rolls.[2] Because only five percent of the nearly 200 charters in his edition were dated precisely to the year in which they were issued, his main concern was to identify characteristics by which earlier documents could be distinguished from later ones. Those characteristics invariably translated into the increasingly formulaic nature of the charter as it developed from the reign of Henry II (1154-89) to that of Henry III (1216-72). The point of departure was the royal writ and the pervasive influence of the royal justice system: ``...the general submission of the greatest men in the land to the ruling of the king's justices upon the phraseology of a charter which is to be [considered] valid is one of the most remarkable results of the work of Henry II and the men who were trained in his court."[3] The ``victory of common form," Stenton argued, was ``the victory of the king's judges".[4] He was convinced that charter chronology was inextricably tied to the growth and development of formulae in the document.

Typical of the twelfth-century charter, but noticeably less common from the early years of the thirteenth, was the use of specific greetings in contrast to the unaddressed notification;[5] of third party consent as opposed to first party warranty;[6] and of vague, in comparison to the progressively more accurate, topographical identification of landed property.[7] Furthermore, while the wording of twelfth-century charters seldom defined the social status of a tenant, thirteenth-century examples made the distinction between the servile and the free quite clear.[8] The twelfth-century conveyance treated churches like any other property; that of the thirteenth concentrated on the advowson.[9] By the second quarter of the thirteenth century, the sealing clause had become a common form of confirmation.[10]

Subsequent editors have profited from Stenton's guidance, but few have achieved his scope let alone expanded significantly on his carefully laid foundations. Many disregard the question altogether. Some have reiterated the importance of royal precedents,[11] the development from assent to warranty,[12] the increasing precision in the description of landed property,[13] and the growing use of the seal for authentication.[14] Others have noted evidence of broader chronological range in charter form. Whereas Stenton associated the ceremonial taking of an oath and pledging of faith with documents of the twelfth century, Philippa Brown has found pledging to be common in the first half of the thirteenth as well.[15] In contrast, it was probably Stenton's statement that grants to religious houses ``in free, pure and perpetual alms" were a ``perfected formula of the thirteenth century" that prompted Una Rees to conclude that ``the phrase `*in puram*' before `*perpetuam elemosinam*'" in a confirmation of Henry II was ``inconsistent with a date early in the reign".[16] Further indicators for dating by form have been found in distraint clauses attached to the grant of a rent,[17] in the wording of titles,[18] in a charter's temporal role vis-à-vis the livery of seisin [19] and, from the late thirteenth century, in formulae allowing enfeoffees total freedom over the alienation of property received.[20]

The importance of the formula as a mechanism for dating medieval charters has nowhere been better

expressed than by Wendy Davies in her detailed study of the Llandaff charters: ``It is a commonplace that genuine charters of the same place and period normally use the same or similar formulae to express similar acts and intentions."[21] However, the question invariably arises as to how much other documents have been subjected to what scholars variously describe as ``alteration", ``editorial contamination", ``fabrication", ``rehandling", ``reworking", or simple ``forgery". Davies adds that the problem with corrupt charters in her collection ``is one of explaining both the use of the same formulae in different charters and the very complex pattern which the sum of different usages presents."[22] There can be no doubt that just as charter formulae change over time and place in response to constant modifications in social circumstances and legal policies, so the content of early charters may have been adjusted by later copyists to conform to current conditions.[23] On the other hand, such emendations are far more likely to occur in papal, royal and episcopal charters which convey privileges than they are in the much more numerous private charters. Several points are to be made in this context. The first is that reworked charters may be considered genuine if they have been formally approved by the grantor, his successors, or a legitimate superior authority, in the form of a confirmation or an inspeximus.[24] Secondly, the introduction of new terms or formulae to a given act might lead the unwary historian to misjudge the original date of composition. Yet it has been pointed out that from a statistical viewpoint, such insertions occur too rarely to mask the original syntax.[25] Even in cases exhibiting numerous changes, the prototype is seldom obliterated.[26] In fact, if the text of a charter is considered as a whole, the date of composition of the different stages may be identified by the currency of the word patterns and formulae appearing in it. Finally, the concern that cartulary copies of charters may have been badly corrupted by scribes during one or a series of subsequent recopyings is probably exaggerated. Generally speaking, professional medieval English scribes working with legal materials in the post-Conquest period were well trained and made accurate reproductions of the texts. It has been shown that even after five recopyings, twelfth-century charters appearing in a fifteenth-century cartulary remained faithful to their original forms.[27] Changes in later recopyings tend to consist of emendations to the spellings of place names to conform to contemporary usage, of abbreviations of the terms of a conveyance, and of reductions or even elimination of the witness list.[28] While abbreviation will certainly reduce the number of forms available for examination, none of these changes are likely to affect the structure of the forms themselves.

In the absence of precise dates, or datable events, written into the text of a document, historians have had recourse to a variety of internal and external indicators allowing the determination of approximate or circa dates. By far the most common method of internal dating is the association of names in a given undated document with their identifiable counterparts in dated sources.[29] Obviously, the greater the number of identifiable names and date ranges available, the greater the potential for determining an accurate date. However, problems do arise. There are cases in which witnesses from older sources have been appended to later lists,[30] and there are lists containing names that have exact counterparts in preceding or succeeding generations.[31] The greatest difficulty of all is that in many cartulary copies, especially the later ones, the witness lists are truncated or omitted altogether.[32] In such situations, the task of assigning anything but broad date ranges has proved to be exceedingly difficult. Occasionally, a terminus post quem for a series of charters can be achieved by determining the date of compilation of a cartulary or its component sections.[33] Finally, in the case of original documents and to some extent even of cartulary copies,[34] there is the test of handwriting, but this too has its limitations within the period under consideration: ``The evidence of handwriting will always distinguish a document written under Stephen from one written under John: it will by no means always determine whether a document was written under Henry II or in the earliest years of Henry III."[35] For Stenton, handwriting could provide a valuable supplement to the dating process, but, he argued, ``in a conflict between the evidence of

handwriting and that of formulas the evidence of formulas is generally to be preferred."[36]

There can be no doubt that in the absence of witness lists, or a sufficient number of identifiable names within the body of a charter, the best alternative for establishing the document's date is a study of its formulae and word patterns. Despite Stenton's insistence on the importance of formulae for this purpose, however, the great majority of the examples he cites do no more than distinguish between the documents of Henry II and Henry III, representing a quarter century at minimum, or more generally between documents of the twelfth and thirteenth centuries. Using all the methods at his disposal, he is in the end obliged to explain ``the wide limits of time which are assigned to charters in [his] book" by the lack of a date within the text.[37] After so much effort to establish valid chronological distinctions among charters that are representative of most medieval English cartularies and collections of original conveyances, it turns out that the methodology is not, in fact, very useful.

When Stenton produced his edition of the Gilbertine charters more than seventy years ago, the dating especially of private charters by the identification of named parties was little more effective than dating by formulae because the pool of names available for comparison in printed sources was relatively small. Since that time, tens of thousands of historical documents have been published, making dating by association of names an increasingly accurate procedure. As a result, attention to formulae for this purpose has largely been considered a last resort when names are either lacking or otherwise unidentifiable. In the many cases where witnesses have been omitted from cartulary copies, editors have been satisfied to ascribe such terms as ``early", ``middle" or ``late" to charters of the twelfth and thirteenth centuries, or to apply date ranges extending over more than half a century.[38] One may well question the value to the historical record of a document that is assigned to such a broad space of time.

The reluctance to develop Stenton's examination of charter formulae for dating purposes can be attributed only in part to the increasing availability of identifiable names. It can also be explained by the assumption, promoted by Stenton himself, that formulae, once established, were immutable. He speaks of clerks working out ``a common form of set phrases," and concludes by extolling ``the victory of common form ... over the forces of social division which were inherent in feudalism."[39] Writing more than seventy years later, Michael Clanchy refers to the ``set phraseology" apparent in charters describing the conveyancing of property.[40] It is this conviction that has led many English historical societies involved in the publication of records, ostensibly for economic reasons, to encourage their editors to calendar the content of thirteenth-century charters, particularly their formulaic content, if they can be attributed to the period post-1250.[41] Some editors calendar from as early as 1200,[42] or the end of the reign of King John,[43] while still others calendar everything.[44] Statements to the effect that ``witness lists and most dating clauses have been given in full" attempt to reassure the reader;[45] as though witness lists were infallible.

The practice of calendaring undated English charters deprives the historian of the most secure evidence for dating that such documents can provide, namely vocabulary, phrases, formulae and syntax. Contrary to popular assumption, the forms and phrases of medieval charters were never ``set". The content of such records certainly became progressively more formulaic during the course of the twelfth and thirteenth centuries, and thereafter, but the formulae exhibited an enormous variety in and of themselves which changed over time.[46] Not only did the formulae change, but so also did the syntax in which they were written. Frequently enough, these modifications reflected the social, political and economic context in which a given document was produced, but there is also evidence of stylistic preferences being current at a particular time, not to mention styles which can be attributed to individual scribes. The language, form and content of the medieval charter can thus be seen to be in constant flux, so much so in fact that when

looked at as a whole and compared with other similar documents, the make-up of a given charter can provide an accurate indication of its date. It can be shown by means of electronic sorting that each word and string of words in context has its unique chronological pattern or ``fingerprint''. Taken together, a document's fingerprints can determine its date.

The Metamorphosis of Charter Content

The evidence for contextual dating appearing here is provided by a database of words and phrases derived from the nearly twelve hundred Essex entries in the great Hospitaller Cartulary of 1442.[47] The database makes it immediately clear that words, phrases and formulae remained in circulation for varying periods of time. Some appeared infrequently over long intervals, flourished during a decade or over several generations, and slowly disappeared. Others began and ended abruptly and yet were current for the full extent of their duration. Many occurred over the entire 250-year period covered by the entries in the Hospitaller Cartulary and consequently proved of no use in the dating process. All of them bear their unique patterns of ocurrence, made visible on chronological bar charts. Examples of these, appearing below, may be compared to the chronological distribution of documents which make up the database (fig. 1).

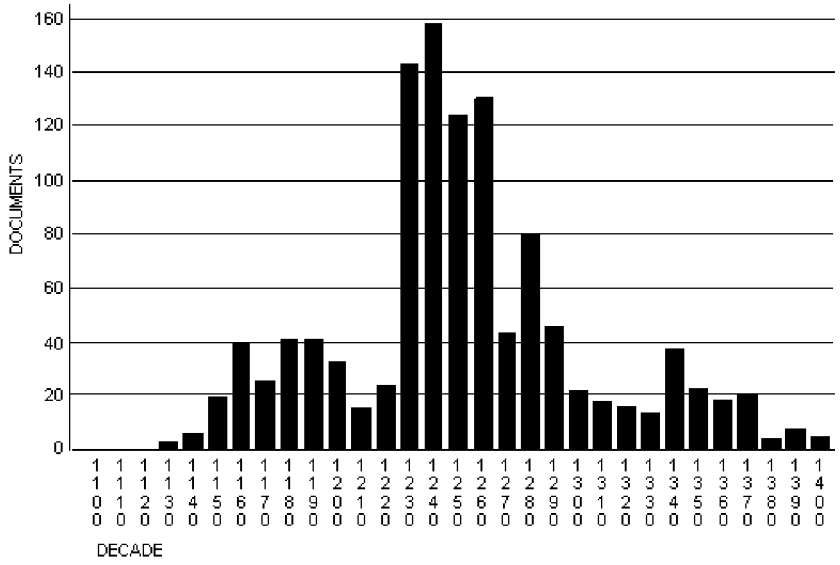


FIGURE 1. CHRONOLOGICAL DISTRIBUTION OF CHARTERS IN THE DEEDS DATABASE TOTALLED BY DECADE

Four major stages in the development of charter diplomatic can be identified in the Hospitallers' Essex archive up to the end of the thirteenth century. The first stage started c. 1145 with the beginning of the Essex record, and continued until the mid-thirteenth century and occasionally to the last quarter. The second, which began c. 1225 and flourished until the last decade of the century, is characterized by the highly egocentric vocabulary of what may be termed the golden age of subinfeudation. The third sees the changes wrought by the passage in 1279 of the Statute of Mortmain, by which royal licence was required before property could be transferred to religious houses. Lastly, the effect of the passage in 1290 of the statute *Quia Emptores*, which was intended to restrict subinfeudation, put an end to much of the language of feudal dependency. Other less prominent groupings are reflected in what follows.

The use of words, phrases and formulae as a dating mechanism is often grammar dependent; that is, they may occur over centuries, but only for a short period in a particular syntax. Among individual words appearing in the first, twelfth-century stage are *`ciminum'* (all forms) current from c.[48] 1160 to 1290,

with a final occurrence in 1309; *`confirmacionem'*, 1160 to 1235; *`donum'*, 1150-1255; *`mansura'*, 1160-90; *`nominatim'*, 1120-1245; *`obolum'*, 1200-95, and only twice thereafter, in 1309 and 1342; *`propinquius'* (all forms) 1175-1285; *`querela'* (all forms), 1150-1269; *`resignare'* (all forms), 1185-1262; *`sciendum'*, 1200-60; and *`in sempiternum'*, rather than the more common *`in perpetuum'*, only once postdates the twelfth century. In the second stage are *`accidere'*, 1225-90; *`appellantur'*, 1225-45; *`chiroteca'* (all forms), 1225-81; *`distringere'* and *`exire'*, and *`percipere'* (all forms), from 1230; *`pastura chemini/vie'*, 1220-50; *`piper'* (all forms), 1225-90 and once in 1309; *`provenire'* (all forms), 1230-95; *`solvere'*, from 1230; *`pure/purius'*, 1230-90. Other words and expressions first used during this period include *`ad cariandum et fugandum'*, from 1245; *`assensu et voluntate'*, 1240-1353; *`chacea'* and *`confrater'*, from 1250; *`herbagium'*, 1260-1309; *`relicta'*, from 1240; *`sicut predictum/prenominatum est'*, 1225-90; and, as an alternative to *`pertinentibus'*, *`spectantibus'*, 1225-1386.

Modifications to charter terminology are equally apparent in every part of the document from the address to the sealing clause. Forms of address limited to the twelfth century include *`matris ecclesie filiis presentibus et futuris'*, 1150-95, with one occurrence c. 1235; *`notum sit vobis quod ego/nos pro salute mea/nostra'*, 1155-96; *`omnibus hominibus suis et amicis [Francis et Anglicis]'*, 1165-90; *`sancte Dei ecclesie filiis'*, 1165-1200. Some extend into the following century: *`omnibus sancte matris ecclesie'*, 1150-1265 (fig. 2); *`presentibus et futuris salutem'*, 1145-1230; *`sciant tam presentes quam futuri'*, 1150-1240. The thirteenth century, especially the second quarter, establishes new formulae: *`noveritis me'*, 1210-1375; *`omnibus Christi fidelibus'*, from 1225 (fig. 2); *`omnibus hoc scriptum'*, 1230-80; *`universis sancte matris ecclesie filiis ad quos presens scriptum pervenerit'*, 1225-85. The salutation *`salutem in Domino'* first occurs c. 1185, but it is rare before c. 1230 and falls off sharply from c. 1260 to a final occurrence in 1377.

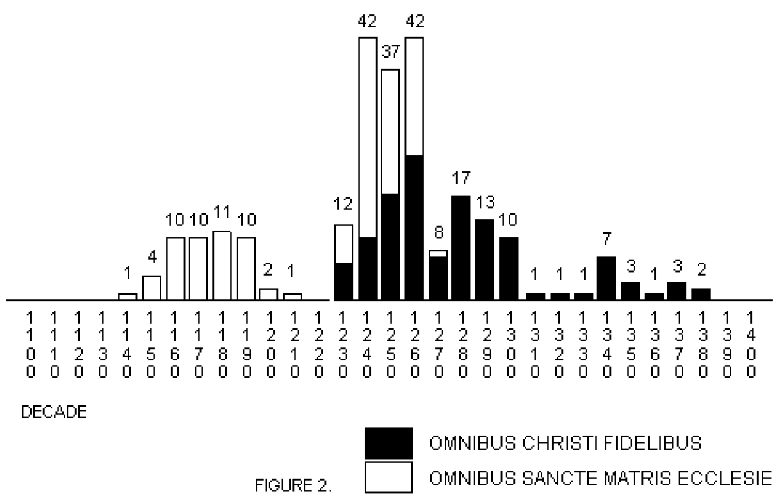


FIGURE 2.

Grants in alms to religious houses frequently include a `pro salute' clause invoking the salvation of individuals or their souls. From the twelfth century, such consideration was offered to spouses, parents, friends, royalty and lords, but by c. 1240 these rather personal expressions are largely replaced by a more pragmatic reference to predecessors and successors: *`amicorum meorum vivorum et mortuorum'*, 1175-1240, and *`omnium amicorum meorum vivorum et mortuorum'*, 1220-40 (fig. 3); *`patrum et matrum [ ... ] et omnium parentum (et) amicorum nostrorum'*, 1150-1200; *`anime mee (et) patris mei et matris mee'*, 1155-1240; *`mei et uxoris mee'*, 1150-65; *`anime mee et uxoris mee'*, 1150-1250. The adjunct *`vivorum et mortuorum'* is common up to c. 1245 and occurs once as late as c. 1275, but *`tam vivorum quam defunctorum'* is confined to 1145-85. *`Pro salute mea et omnium antecessorum et*

successorum (et uxoris) et heredum meorum' is similarly limited to the twelfth century (1150-75), while *`pro salute anime mee et antecessorum meorum'* can be traced 1175-1285 with a final occurrence in 1329. Current in the second quarter of the thirteenth century is *`pro salute anime mee et antecessorum (meorum) et heredum/successorum'* or, c. 1230-85, *`pro salute anime mee (et) antecessorum et successorum meorum'*. This group appears to terminate with the enforcement of the Statute of Mortmain; after c. 1285 even *`pro salute anime mee'* fades from view (fig. 4).

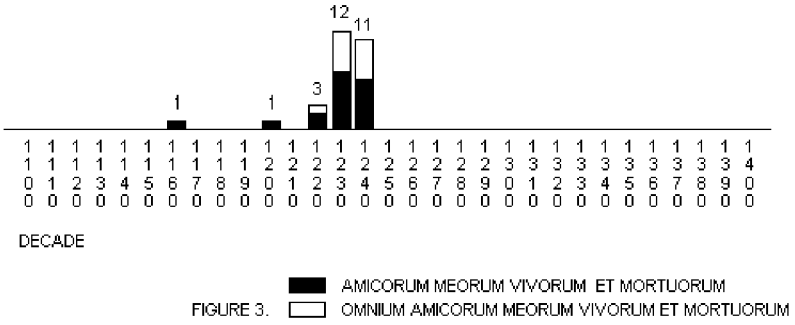


FIGURE 3.

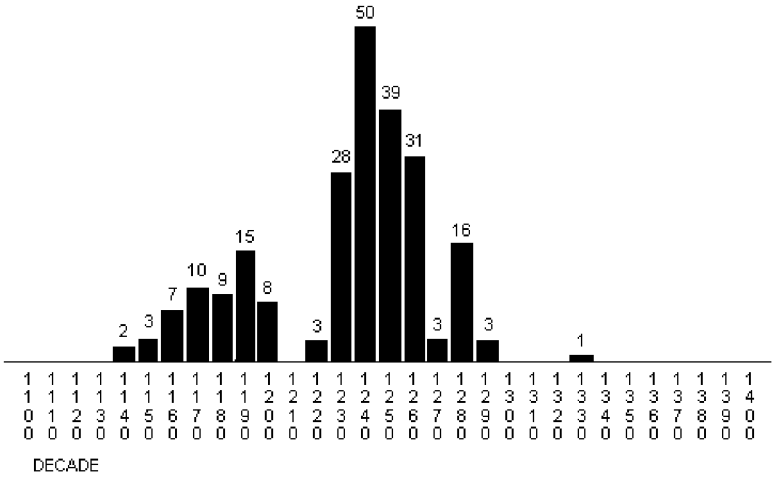


FIGURE 4. PRO SALUTE ANIME MEE

Many expressions of grants in alms that had been current in the twelfth century began to disappear in the thirteenth: *`in elemosinam'*, 1150-1200; *`hanc donacionem feci ego'*, 1150-1225; *`sicut aliqua elemosina liberius et quiecius dari potest domui religionis'*, 1200-45; *`libere et quiete ab omnibus secularibus serviciis'*, 1155-1200 and twice c. 1245; *`ab omni seculari servicio et exaccione'*, 1150-1250; *`ut participes simus omnium bonorum'*, 1220-40; *`alicui domui religionis dari potest'*, 1225-55. *`Sicut aliqua elemosina liberius, purius et quiecius'* only occurs c. 1265 and in the Hospitaller Cartulary is probably the mark of an individual scribe.[49] Mortmain put an abrupt end to this terminology in the Hospitaller archive; expressions of long standing disappear c. 1285: *`liberam (et) puram et perpetuam elemosinam'*, 1150-1285; *`viris religiosis'*, 1185-1285; *`sicut aliqua elemosina liberius et purius'*, 1225-85.

Expressions conveying the action of transfer are not governed by statute, yet temporal patterns are clearly evident. Variants from the twelfth and first quarter of the thirteenth century include: *`me concessisse et dedisse'* without *`confirmasse'*, 1140-85; *`dedi (et) concessi in perpetuam elemosinam Deo et beatis pauperibus'*, 1150-95; *`sciatis me dedisse et hac mea carta confirmasse'*, 1160-1235; *`noveritis me'*, 1210-1375; *`concessisse et hac presenti carta mea confirmasse'*, 1215-55. Once again, the second

quarter of the century sees considerable innovation: *`concessi, dedi et hac presenti carta mea confirmavi'*, 1225-1343; *`concessisse (et) dedisse et presenti carta mea'*, 1230-55; *`noverit universitas vestra me concessisse'*, 1230-1314 (fig. 5); *`sciatis me dedisse (et) concessisse et presenti carta mea confirmasse'* 1230-40; *`noveritis me dedisse, concessisse'*, 1235-1337. From mid-century appears *`concessisse et (hoc) presenti scripto (meo) confirmasse'*, 1250-1349. *`Habere vel habere potui'* occurs c. 1240-90.

Among common objects granted are *`totam terram illam'*, 1160- 1255; *`totum ius'*, 1200-50; *`totum ius et clameum'*, from c. 1220 (fig. 6); *`homagium et servicium'*, 1225-1318; and *`annuum redditum'*, 1235-75. These are often made *`cum toto tenemento'*, 1225-50 and once c. 1290; *`sine aliquo/ullo retenemento'*, 1225-1348; and *`... ad (pre)dictam terram spectantibus'*, 1250-95.

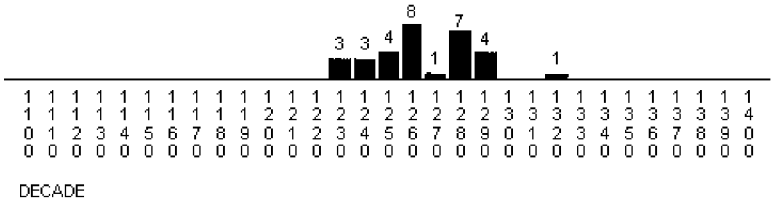


FIGURE 5. NOVERIT UNIVERSITAS VESTRA ME CONCESSISSE

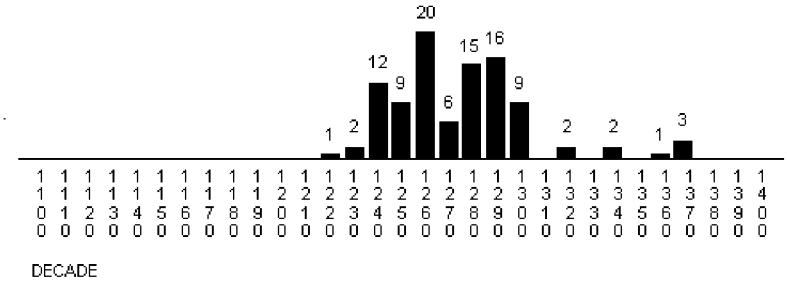


FIGURE 6. TOTUM IUS ET CLAMEUM

Twelfth-century conveyances tend to be vague about property description and location, although the last quarter of the century produces such words and phrases as *`in campo qui vocatur'*, 1175-1295; *`propinquior'*, 1175-1285, *`que/quod adiacet'*, 1175-1200. Greater precision begins c. 1210 with *`in longitudine'* (to the fifteenth century); *`magnum cheminum'* as a boundary, 1210-70; *`sepibus et fossatis'*, 1210-1361. From c. 1225 to 1230, the vocabulary of boundary formulae is essentially established: *`abuttat ad unum capud'*, from 1230; *`que/quod iacet sub'*, 1225-55; *`quo itur'*, 1225-1330; *`tendit'* for a boundary road, 1230-1300; *`sicut sepibus et fossatis includitur'*, 1230-1356 (fig. 7); and *`unde unum capud abuttat'*, from 1225. *`Divisis'*, which appears initially in a royal charter of 1137, only occurs in private charters c. 1260-85. *`In latitudine inter terram'* occurs c. 1250-1345.

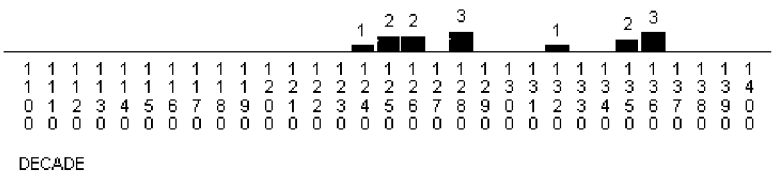


FIGURE 7. SICUT SEPIBUS ET FOSSATIS INCLUDITUR

The conditions of tenure lie at the crux of each conveyance and are set out in the *`habendum et tenendum'* and subsequent clauses. It is here, especially, that the effects of the statutes of Edward I are reflected, but many phrases came and went apparently quite independent of that legislation. *`Habend. et tenend. illi et heredibus suis'* occurs 1225-40, and *`in puram et perpetuam elemosinam'* c. 1230-55, while *`de me et heredibus meis'* and *`sibi et heredibus suis'* are absent after c. 1295. The inverted form *`tenendum et habendum'* is rare before c. 1225 (although it does occur c. 1175-1215), but becomes noticeably popular c. 1225-35. *`Tenendum de me et heredibus meis'*, without the *`habendum'*, is current c. 1175-1230. *`Habend. et tenend. libere'* occurs c. 1200-55; *`libere et quiete, bene et in pace'*, 1195-1275; *`libere, quiete, integre, bene et in pace'*, 1225-1360; *`adeo libere'*, 1235-86; *`libere, quiete, bene et in pace, hereditarie, imperpetuum'*, 1260-1325. Land could be alienated by the recipient *`quibuscumque dare vel vendere vel legare vel assignare voluerit'*, 1225-75; *`vel alio modo assignare voluerit'*, 1240-1300; *`vel cuicumque et quandocumque'*, 1245-85; *`preter quam domui religionis'*, 1210-50. It was conveyed free of *`serviciis, consuetudinibus et demandis'* (1220-55), and came with rights to *`rebus cunctis'* (1260-91) and *`terre spectantibus'* (1250-1351).

Compensation for `having and holding' is set out in the *`reddendo'* clause: *`reddendo inde annuatim michi et heredibus meis'* (of 100 examples, three occur before c. 1230 and one after c. 1290). Rental payments may be made *`ad/per quatuor terminos'*, 1185-1250; *`annuatim ad duos terminos'*, 1210-75; *`ad duos terminos anni'*, 1210-85. In addition to the property itself, these payments compensate *`pro omnibus serviciis et consuetudinibus et exaccionibus'*, 1190-1250 (fig. 8); *`pro omnibus serviciis, consuetudinibus et demandis'*, 1210-55; *`pro omnibus serviciis et consuetudinibus et demandis'*, 1225-35; *`pro ... secularibus demandis'*, 1240-1303; *`pro omnibus serviciis, consuetudinibus et demandis secularibus'*, 1250-75. They cover all obligations *`salvo servicio domini regis'* (1150-1280). In recognition of the conveyor's act (*`pro hac autem donacione et concessione et ... carte mee confirmacione'*, 1225-50), the recipient frequently makes a one-time cash down payment known as gersum (fig. 9) which emphasizes his feudal dependence. That term does not appear in the Hospitallers' Essex archive after 1297.[50]

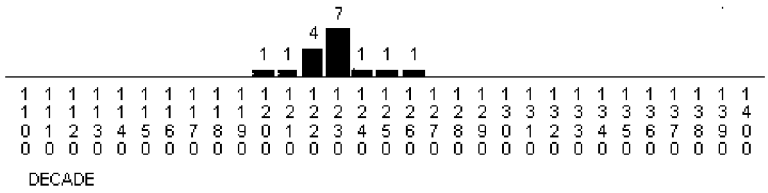


FIGURE 8. PRO OMNIBUS SERVICIIS ET CONSUETUDINIBUS ET EXACCIONIBUS

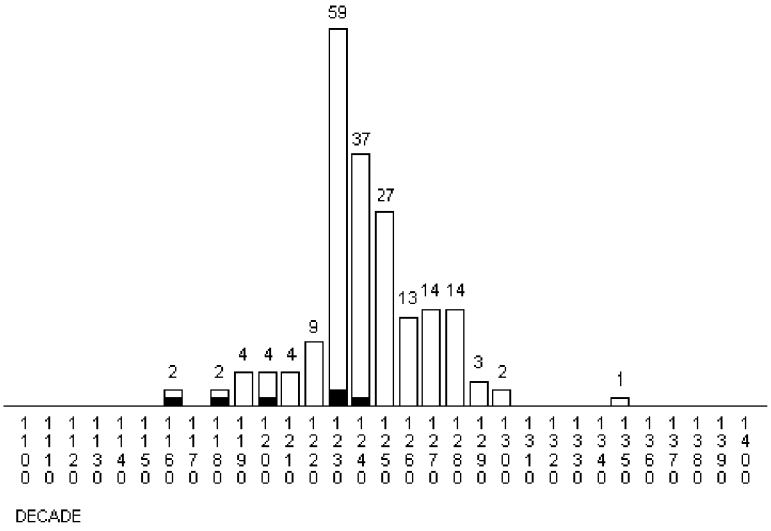


FIGURE 9.

It remains for the conveyor to guarantee, by means of the warranty clause, the recipient's possession of the property transferred. The language of warranty becomes common from c. 1225: *`warantizacio/warantizacione'*, 1225-80; *`warantizabimus predictum redditum'*, 1225-55; *`warantizabimus (pre)dictis fratribus'*, 1225-55; *`contra omnes homines et feminas warantizabimus'* (fig. 10) and *`contra omnes homines et feminas imperpetuum'*, 1225-80; *`per predictum servicium contra omnes homines et feminas'*, 1225-70; *warantizabimus, acquietabimus et defendemus imperpetuum'*, 1235-1348. The warranty covers all *`ad (pre)dictam terram spectantibus'*, 1250-95; *`cum pertinentiis per predictum servicium'*, 1240-50. It implicates the conveyor, *`heredes mei vel mei assignati'* (1230-95) and covers the recipient *`vel suis assignatis'* (1225-1342) or whomsoever *`assignaverit'* (1210-50).

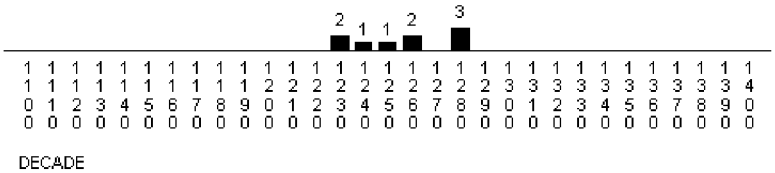


FIGURE 10. CONTRA OMNES HOMINES ET FEMINAS WARANTIZABIMUS

The act is then formalized and given greater security by the application of seals: *`scriptum sigilli mei apposicione (cor)roboravi'*, 1195-1260 (fig. 11); *`imperpetuum perseveret'*, 1200-60; *`et quia volo quod'*, 1225-70; *`robur et testimonium'*, 1225-75; *`ut (autem) hec mea donacio (et concessio) et carte mee confirmacio firma/rata et stabilis'*, 1225-80; *`in huius (autem) rei testimonium'*, 1225-90; *`huic scripto'*,

from 1230; *`ad maiorem ... securitatem'*, 1240-80; *`in/ad modum cirografi confecto'*, 1250-1305; *`sigillum meum apposui'*, from 1225; *`in cuius rei testimonium huic carte sigillum meum apposui'*, 1230-95; *`presens scriptum sigilli mei munimine roboravi'*, 1230-85.

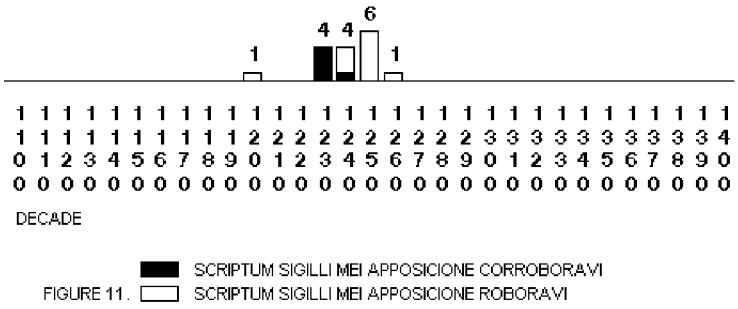


FIGURE 11.

Forms of short duration, such as *`cum pertinentiis per predictum servicium'* (1240-50), are more likely to be the preference of a particular scribe than a reflection of social or political change on charter diplomatic. If cases are numerous over brief periods, or occur more frequently in some periods than at others, there is the further possibility that their use was governed by vogue. The many phrases in far longer currency have greater claim to an existence governed by common law. There are, in addition, contributions peculiar to the households or institutions which produced archives. They display a wide variety of forms of address and reference, some of which undoubtedly reflect changes in the profile and administration of the organization itself. For a short period in the twelfth century mention is made in the Hospitaller Cartulary of the interests `of the poor of Jerusalem' (*`pauperum Ierusalem'*, 1148-85). Conveyances are issued *`Deo et sancte Marie et sancto Iohanni Baptiste'* c. 1145-1240, but thereafter *`sancte Marie'* is with rare exceptions replaced by *`beate Marie'* (fig. 12). *`Beatis pauperibus sancte domus hospitalis Ierusalem'* occurs c. 1160-1260, but from c. 1200-1260 it may be followed by *`et eiusdem domus fratribus'*. The second quarter of the century introduces further variety: *`et fratribus eiusdem domus Deo servientibus'* and *`fratribus ibidem Deo servientibus'*, 1230-75. Thirty-four instances of *`et fratribus hospitalis sancti Iohannis Ierusalem'* occur c. 1230-95, half of them during the 1270s. The phrase is followed occasionally from c. 1230, and frequently c. 1255-85, by *`in Anglia'*. Also during the second quarter of the century the prior and successors of the brethren are added to the Order's growing formulaic chain of recipients: *`priori et fratribus sancte domus hospitalis Ierusalem'*, 1230-90; *`priori et fratribus (hospitalis) sancti Iohannis Ierusalem in Anglia'*, 1225-1339; *`predictis priori et fratribus et eorum successoribus'*, 1225-60.

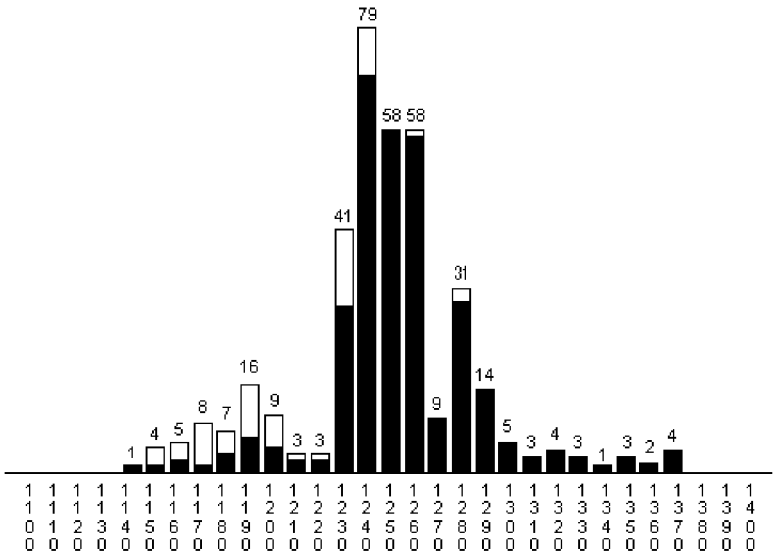


FIGURE 12.

Grants to religious orders regularly invoke the Church or a divine presence: *`omnibus sancte matris ecclesie'*, 1150-1255; *`sancte Dei ecclesie filiis'*, 1165-1200; *`omnibus Christi fidelibus'*, from 1225; *`salutem in Domino sempiternam'*, 1245-1340; *`divine pietatis intuitu'*, 1200-55; and *`caritatis intuitu'*, without *`divine'*, c. 1245-85.

Women do not play a large role in the vocabulary of conveyancing, but some expressions are particular to them. *`Pro salute anime mee et uxoris mee'*, *`uxoris mee et puerorum'* and *`uxori mee'* all occur c. 1155-1250. *`In mea viduitate'* (without *`legitima', `libera' or `pura'*) occurs c. 1220-80; *`libera viduitate'* c. 1250-60; *`liberum maritagium*' c. 1225-60; *`potestate'* c. 1220-1339; and *`quondam uxor'* from c. 1230, and *`relicta'* from c. 1240, replacing *`vidua*', 1195-1230 (fig.13).

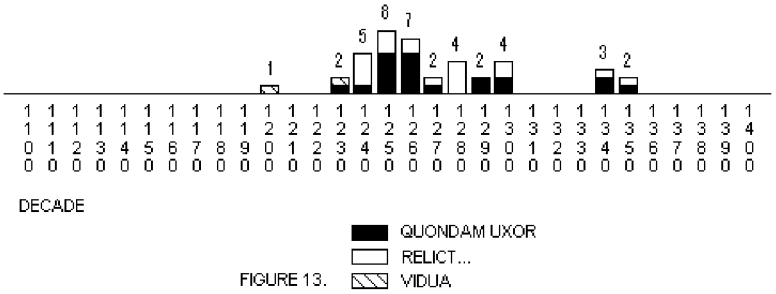


FIGURE 13.

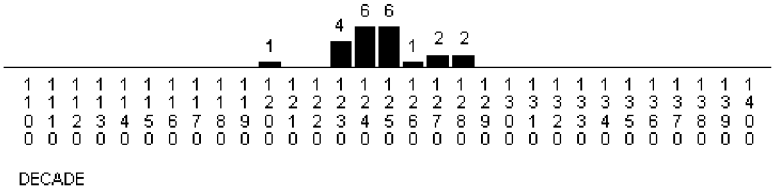


FIGURE 14. DE ME ET HEREDIBUS MEIS SIBI ET HEREDIBUS SUIS

The charters of the thirteenth century, especially from c. 1225 to 1290, bear witness to an unparallelled freedom in property conveyancing which permeated society as a whole. The beginning and most active phase of this remarkably open market on land transfer in the second quarter of the century corresponded to an upsurge in the economy as a whole and to major advancements in trade and industry.[51] With few exceptions, the actions initiated by the conveyor revolve around him and the conditions of tenure are controlled by him and his heirs and assigns. The sense of `I-me-my' is inherent in all parts of the document. Property granted *`pro me et heredibus meis'* (1225-70) is held *`de me et heredibus meis sibi et heredibus suis'* (1200-80) (fig. 14), and *`de meo feodo'* (1220-75). Payments are rendered *`michi et/vel heredibus meis et/vel meis assignatis'* (1230-90) in compensation for the conveyance and for all *`demandis secularibus'* (1240-90). The conveyor guarantees his transfer *`per predictum servicium'* (1190-1290). A tenant, *`vel sui assignati'*, owes *`homagium et servicium'* (1225-1318), while land granted in alms is free from service due *`ad me vel ad heredes meos'* (1155-1256). A lord may quitclaim *`ius et clameum'* (from 1220) to a payment which the tenant *`michi reddere consuevit'* (1240-80) for land which *`de me tenuit'* (1160-1294). Property is transferred to the recipient, who in turn has the right to convey it to his heirs *`vel cuicumque et quandocumque (voluerit)'* (1245-85), or *`vel alio modo assignare voluerit'* (1260-1300). Provided he and his successors perform the required service, the recipient acquires those same rights over the property transferred as were previously held by the conveyor. The `I-me-my' cycle then begins again, but frequently through subinfeudation, at one step further away from the chief lord of the fee.

The notice that service is to be rendered to the unspecified chief lord(s) of the fee first occurs c. 1230 *(`servicium quod pertinet dominis feodi'*). Any such arrangements are not, however, to be construed as being in anticipation of *Quia Emptores*. They are few and far between and in every case concern the transfer of a pecuniary service which the conveyor was wont to render to that lord. The question of tenure does not arise until after the passage of *Quia Emptores* in 1290. At that point, there is an immediate, incontrovertible and comprehensive change in the diplomatic of conveyancing. The context of `I-me-my' is thereafter confined to the direct action of conveying, warranting and sealing, and to cases of reversion. The concept of tenure is invariably couched in terms of dependency on the chief lord(s) of the fee. At the same time, mention of scutage, royal service, gersum, gloves and spice rents (cloves, cumin, ginger, and pepper) disappears entirely from the record (figs. 9, 15). The recipient continues to pay a specified rent to the conveyor, but the nature of the service to be rendered to the lords of the fee is taken for granted: *`faciendo inde capitalibus dominis feodi omnia servicia de iure debita et consueta'* (c. 1281).

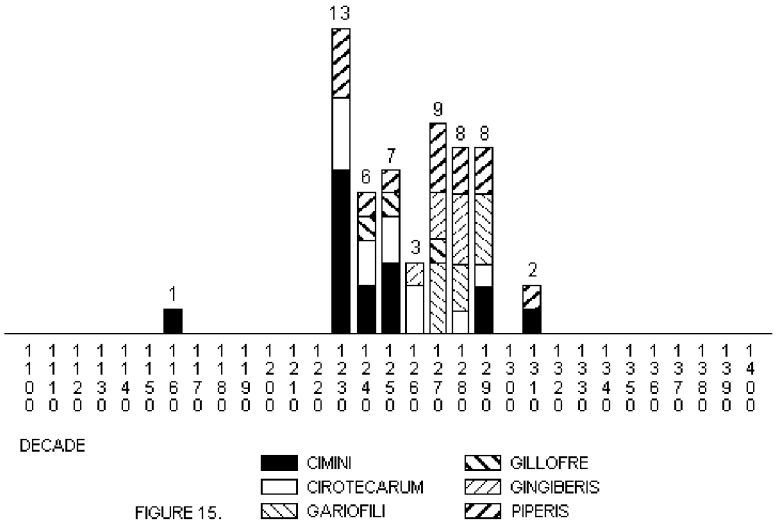


FIGURE 15.

The preceding discussion has emphasized aspects of the charter's varied and continuously changing formulaic vocabulary. The dates associated with this vocabulary suggest how such constant and widespread modifications can be used in the dating of undated documents. The examples cited represent a miniscule proportion of the range to be found in any cartulary or other charter collection and reflect the partial content of only seventy-five of the approximately twelve hundred entries in the Hospitallers' Essex archive.[52] The database of word patterns which derive from that archive contains over 97,000 distinct entries. Full exploitation of the texts of any charter collection can now be achieved interactively through the implementation of electronic concordance, sorting and statistical programs. The larger the collection, the greater the number of recurring word patterns it will contain and, as the contents of undated documents are compared with it, the more accurate their dating can be expected to become. As the dating of twelfth- and thirteenth-century charters is perfected, conveyances will become far more valuable than they presently are for the historical investigation of the period.

Procedure for Dating by Formulae

The procedure developed by the DEEDS[53] Project at the University of Toronto for dating undated charters by means of the word patterns contained in them is summarized here and set out in more detail below. There are three distinct stages. The first is the creation of a database of dated word patterns. In this case, the word patterns derive from the Essex charters in the Hosptitaller Cartulary of 1442. Because the majority of those charters have themselves been approximately dated by internal evidence, some divergence from a precise chronology can be expected. The Project is presently engaged in collecting a large body of charters that can be assigned accurately to a given year. The content of those charters will eventually serve as the source for a new database of precisely dated word patterns.

A word pattern, or string, is any group of two or more word-forms which occurs more than once in the selection of charters from which the database is formed. Two-word patterns are naturally the most frequent. Despite their brevity, and as a consequence the broad range of contexts in which they may occur, their chronological ``fingerprints" can be very distinct and can serve as initial indicators of changing terminology (see, for example, fig. 12). The longer the string, the fewer occurrences and the shorter the temporal span thereof will be in terms of the consecutive components of the string. Short patterns which in every case are found to be embedded in larger patterns of exactly the same content and

order are not recorded separately in the database. Single words, each of which has its own syntactical and chronological ``fingerprint'', have not as yet been incorporated into the database of patterns. Also excluded are word strings which have no counterparts in the database, the reason being that they have no ``fingerprint''. It is entirely possible that such a unique string might find a counterpart in an external document for which a date is sought, but the evidence it would produce is considered too slim to justify the increased processing time necessary to search an enlarged database every time. On the other hand, the larger the database, the greater the possibility of identifying multiple instances of the same word pattern.

To test the system, only dated documents from sources external to the Hospitaller Cartulary were run against the database. The dates rendered by interactive analysis all fell within a decade of the date stipulated within the document. It is anticipated that once the new database of precisely dated word strings is available, the margin of chronological error will be further reduced. A document whose precise date corresponded exactly with the electronically produced date is used here as an example. That document, referred to as STP333,[54] was chosen randomly from among the Essex charters in an external source.

Prior to processing, all place and personal names are converted to the letter `P', and all numbers to the sign `#', to avoid the interruption of word strings incorporating such variables.[55] Spelling, where it cannot be shown to appear in a distinct chronological context, is standardised to conform to spellings current in the database.

The procedure outlined more fully below in stage 2, `Comparing an Undated Document with Dated Documents', leads to the selection of word patterns in the external document which have exact counterparts in the database. Each pattern selected from the database is associated with the document number, date and type of its source. Embedded patterns are removed.

The historian's treatment of the records in the resultant file may amplify, or decrease, the accuracy of the date selected, for it is here in the third and final stage dedicated to the actual dating of the `undated' document that experience and a comprehensive knowledge of the sources come into play. One must decide which patterns are valid for dating a particular document and which, if any, are not. Such decisions are arbitrary. External document STP333 is a transfer. Since the majority of patterns selected from the database also derive from transfers, it was considered prudent to discard those issuing from other document types. Also discarded were patterns that occurred infrequently over a wide chronological range, patterns that occurred over a period of more than fifty years, and patterns that occurred fewer than five times (see fig. 34). Once the correct process of elimination has been determined, it should be possible to apply it to all cases of the same type.

In addition to the aforementioned arbitrary exclusions, one more word string was dropped because of its vague connotation and varied context: `in P de', where `P' designated both place and personal names in different contexts in the six cases in which it occurred in the database (fig. 35).

The remaining word patterns are grouped numerically (by frequence of occurrence) and chronologically (by occurrence over time) according to the number of words in the string (fig. 36a). Numerical modifiers, chosen arbitrarily, are then applied as weighting factors to each quantity, in this case giving a weight of `0' to two-word patterns, `1' to three-word patterns and increments of 20% for each longer word string thereafter. Thus, four-word patterns receive a value of `1.2', five-word patterns a value of `1.4', and so on (fig. 36a-b). Points for a given year are then totalled. To compensate for the unequal chronological distribution of documents in the database, the total points for any five-year period are transferred to another table (fig. 36b provides the example of five-year periods ending in five or zero only). The highest

total for a given five-year period, calculated annually from the date of the first occurrence of a common word string in STP333 in 1225 to the date of the last in 1290, indicates the most likely date of issue for the document to be in the period 1238-42 (fig. 37). STP333 is dated to the twenty-third year of the reign of King Henry III, or 1239.

The system of dating undated documents developed by the DEEDS Project has now to be modified and perfected such that the same degree of accuracy can be achieved for every external charter run against the database. It is essential that the new database of precisely dated word patterns be created. To this end, the members of the DEEDS Project invite the cooperation of scholars willing to provide transcripts of heretofore unpublished charters from the twelfth or thirteenth centuries, datable to within a year, or transcripts of the same in machine readable form either published or unpublished. At the same time, colleagues who would like to run independent tests on the DEEDS methodology are invited to do so using the guide lines set out below.

Procedure for Dating Undated Documents Using a Relational Database.

By Rodolfo Fiallos

INTRODUCTION.

This system was designed to provide a possible date for an undated document. The dating of the document is based on the comparison of word patterns appearing in it with a database of word patterns obtained from dated or circa-dated documents. The process of creating the system in a relational database was divided in three stages, as shown below:

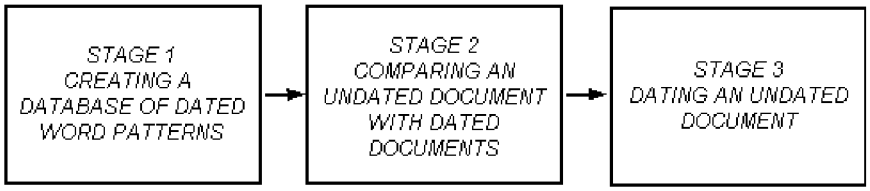


Figure 16. Development Stages

STAGE 1

STEP 1: CREATING A WORKING TABLE.
STEP 2: CREATING TWO-WORD PATTERNS.
STEP 3: CREATING THREE-WORD PATTERNS.

STAGE 2

STEP 1: STORING THE UNDATED DOCUMENT IN A WORKING TABLE.
STEP 2: BUILDING THE SEARCH STRING.
STEP 3: SEARCHING FOR THE LONGEST WORD PATTERN.
STEP 4: SEARCHING FOR SHORTER WORD PATTERNS.
STEP 5: CREATING A TABLE TO STORE RESULTS.

STEP 6: ELIMINATING EMBEDDED WORD PATTERNS.

STAGE 3

STEP 1: SELECTION OF VALID DATES BY DOCUMENT TYPE.
STEP 2: WEIGHTING OF FREQUENCIES ACCORDING TO THE NUMBER OF WORDS IN THE PATTERN.
STEP 3: REPORTING THE BEST RANGE.

STAGE 1. Creating a Database of Date Word Patterns

STEP1: CREATING A WORKING TABLE. Create a table as shown below and name it WORD_PATTERNS (Figure 17).

DNUM is the document identification number
SEQ represents the numerical position of the word within the document.
WORD contains every word in the document.
WORD2 will be used later to create the patterns.
Suggested Column Width

DNUM (6)	SEQ (5)	WORD (24)	WORD2 (24)	NO_WORDS (3)	NO_WP (5)	WP (255)
10059	1	NOTUM				
10059	2	SIT				
10059	3	OMNIBUS				
10059	4	SANCTE				
10059	5	MATRIS				
...	...	...				
10063	1	NOTUM				
10063	2	SIT				
10063	3	OMNIBUS				
10063	4	SANCTE				
10363	5	MATRIS				
...	...	...				
10106	1	NOTUM				
10106	2	SIT				
10106	3	OMNIBUS				
10106	4	CHRISTI				
10106	5	FIDELIBUS				
...	...	...				

NO_WORDS will record the number of words in each pattern.
NO_WP will contain a word pattern code.
WP will contain the longest string of words occurring more than once in the entire table.

Figure 17. Table WORD_PATTERNS.

Insert each word of a dated document as follows:
(a) Enter the document identification number in column DNUM.
(b) Enter in SEQ, numerical position of word within document in sequence.
(c) Enter every word in column WORD.

Because tables in a relational database are accessed record by record, combinations of words must be contained in the same record. The combination will be compared with the other records in the entire table. If an exact match is not found, the current combination will not be considered a valid two-word

pattern.

STEP 2: CREATING TWO-WORD PATTERNS.

(a) Opposite every word in column WORD, enter the following word in column WORD2 (Figure 18).

DNUM (6)	SEQ (5)	WORD (24)	WORD2 (24)	NO_WORD (3)	NO_WP (5)	WP (255)
10059	1	NOTUM	SIT			
10059	2	SIT	OMNIBUS			
10059	3	OMNIBUS	SANCTE			
10059	4	SANCTE	MATRIS			
10059	5	MATRIS	...			
...	...	...				
10063	1	NOTUM	SIT			
10063	2	SIT	OMNIBUS			
10063	3	OMNIBUS	SANCTE			
10063	4	SANCTE	MATRIS			
10563	5	MATRIS	...			
...	...	...				
10106	1	NOTUM	SIT			
10106	2	SIT	OMNIBUS			
10106	3	OMNIBUS	CHRISTI			
10106	4	CHRISTI	FIDELIBUS			
10106	5	FIDELIBUS	...			
...	...	...				

Figure 18. Building two-word patterns in table WORD_PATTERNS.

(b) Scan the table to find other instances of the combination WORD, WORD2 thus created.
(c) If the combination is found,

1. Enter the number 2 in column NO_WORDS.
2. Concatenate columns WORD and WORD2, divided by a space.
3. Enter the resulting combination in column WP (see 'NOTUM SIT' and 'OMNIBUS SANCTE' in Figure 19).

(d) If there is no match, leave column NO_WORDS and WP blank (see 'OMNIBUS CHRISTI' and 'CHRISTI FIDELIBUS' in Figure 19).
(e) Clear column WORD2 after updating column NO_WORDS and WP.

DNUM	SEQ	WORD	WORD2	NO_WORD	NO_WP	WP
(6)	(5)	(24)	(24)	(3)	(5)	(255)
10059	1	NOTUM	SIT	2		NOTUM SIT
10059	2	SIT	OMNIBUS	2		SIT OMNIBUS
10059	3	OMNIBUS	SANCTE	2		OMNIBUS SANCTE
10059	4	SANCTE	MATRIS	2		SANCTE MATRIS
10059	5	MATRIS	...			
...	...	...				
10063	1	NOTUM	SIT	2		NOTUM SIT
10063	2	SIT	OMNIBUS	2		SIT OMNIBUS
10063	3	OMNIBUS	SANCTE	2		OMNIBUS SANCTE
10063	4	SANCTE	MATRIS	2		SANCTE MATRIS
10563	5	MATRIS	...			
...	...	...				
10106	1	NOTUM	SIT	2		NOTUM SIT
10106	2	SIT	OMNIBUS	2		SIT OMNIBUS
10106	3	OMNIBUS	CHRISTI			
10106	4	CHRISTI	FIDELIBUS			
10106	5	FIDELIBUS	...			
...	...	...				

Figure 19. Table WORD_PATTERNS after creating two-word patterns.

This process leads to the creation of a complete series of two-word patterns. These newly-created patterns are candidates for further expansion. The procedure for establishing three-word patterns is slightly different and it is shown below. Patterns of four words or more follow the procedure set for three-word patterns.

STEP 3: CREATING THREE-WORD PATTERNS.

Since all words in a possible pattern must be contained in the same record (see STEP 2) the procedure is continued as follows for every record in the table having NO_WORDS equal to 2.
(a) Copy the following (in this case, the third) WORD in the sequence into column WORD2.
(b) Scan columns WP and WORD2 for any combinations occurring more than once in the entire table.
(c) For each combination found:

1. Update the WP column with the value of WP concatenated with WORD2, divided by a space.
2. Update the NO_WORDS column with the relevant number (in this case, 3).

(d) If no combination is found, leave WP and NO_WORDS untouched.
(e) Clear column WORD2 for the next step.

DNUM	SEQ	WORD	WORD2	NO_WORD	NO_WP	WP
(6)	(5)	(24)	(24)	(3)	(5)	(255)
10059	1	NOTUM	OMNIBUS	2		NOTUM SIT
10059	2	SIT	SANCTE	2		SIT OMNIBUS
10059	3	OMNIBUS	MATRIS	2		OMNIBUS SANCTE
10059	4	SANCTE	...	2		SANCTE MATRIS
10059	5	MATRIS				
...	...	...				
10063	1	NOTUM	OMNIBUS	2		NOTUM SIT
10063	2	SIT	SANCTE	2		SIT OMNIBUS
10063	3	OMNIBUS	MATRIS	2		OMNIBUS SANCTE
10063	4	SANCTE	...	2		SANCTE MATRIS
10563	5	MATRIS				
...	...	...				
10106	1	NOTUM	OMNIBUS	2		NOTUM SIT
10106	2	SIT	CHRISTI	2		SIT OMNIBUS
10106	3	OMNIBUS				
10106	4	CHRISTI				
10106	5	FIDELIBUS				
...	...	...				

Figure 20. Building three-word patterns in table WORD_PATTERNS.

DNUM	SEQ	WORD	WORD2	NO_WORD	NO_WP	WP
(6)	(5)	(24)	(24)	(3)	(5)	(255)
10059	1	NOTUM	OMNIBUS	2		NOTUM SIT
10059	2	SIT	SANCTE	2		SIT OMNIBUS
10059	3	OMNIBUS	MATRIS	2		OMNIBUS SANCTE
10059	4	SANCTE		2		SANCTE MATRIS
10059	5	MATRIS				
...	...	...				
10063	1	NOTUM	OMNIBUS	2		NOTUM SIT
10063	2	SIT	SANCTE	2		SIT OMNIBUS
10063	3	OMNIBUS	MATRIS	2		OMNIBUS SANCTE
10063	4	SANCTE		2		SANCTE MATRIS
10563	5	MATRIS				
...	...	...				
10106	1	NOTUM	OMNIBUS	2		NOTUM SIT
10106	2	SIT	CHRISTI	2		SIT OMNIBUS
10106	3	OMNIBUS				
10106	4	CHRISTI				
10106	5	FIDELIBUS				
...	...	...				

Figure 21. Searching for three-word patterns in table WORD_PATTERNS.

Figure 22 represents the final appearance of the table WORD_PATTERNS after the creation of three-word patterns. In this example, records with column NO_WORDS = 3 contain word patterns that were found more than once in the entire table. Records with a value of 2 in column NO_WORDS at the end of step 3 will not grow and will remain as they are. Records with a value of 3 in column NO_WORDS are candidates to become four-word patterns.

DNUM	SEQ	WORD	WORD2	NO_WORD	NO_WP	WP
(6)	(5)	(24)	(24)	(3)	(5)	(255)
10059	1	NOTUM	OMNIBUS	3		NOTUM SIT OMNIBUS
10059	2	SIT	SANCTE	3		SIT OMNIBUS SANCTE
10059	3	OMNIBUS	MATRIS	3		OMNIBUS SANCTE MATRIS
10059	4	SANCTE		2		SANCTE MATRIS
10059	5	MATRIS				
...	...	...				
10063	1	NOTUM	OMNIBUS	3		NOTUM SIT OMNIBUS
10063	2	SIT	SANCTE	3		SIT OMNIBUS SANCTE
10063	3	OMNIBUS	MATRIS	3		OMNIBUS SANCTE MATRIS
10063	4	SANCTE		2		SANCTE MATRIS
10563	5	MATRIS				
...	...	...				
10106	1	NOTUM	OMNIBUS	3		NOTUM SIT OMNIBUS
10106	2	SIT	CHRISTI	2		SIT OMNIBUS
10106	3	OMNIBUS				
10106	4	CHRISTI				
10106	5	FIDELIBUS				
...	...	...				

Figure 22. Table WORD_PATTERNS after finishing the creation of three-word patterns.

To produce four-word patterns, repeat step 3, introducing the next word in sequence to the growing pattern.
At the end of the process, the column WP will contain the longest word pattern that can be found in the database of dated documents. Column NO_WORDS contains the number of words that make that particular word pattern.
This is the end of the first stage. The second stage is to produce word patterns from the undated document and use them to scan column WP of table WORD_PATTERNS to find corresponding patterns in the database of dated documents. With the document number it is possible to refer to another table that contains all the characteristics associated with it, including date. This table will be introduced later and is called DATED_DOC (Figure 32).

STAGE 2. Comparing an Undated Document with Dated Documents

STEP 1: STORING THE UNDATED DOCUMENT IN A WORKING TABLE.

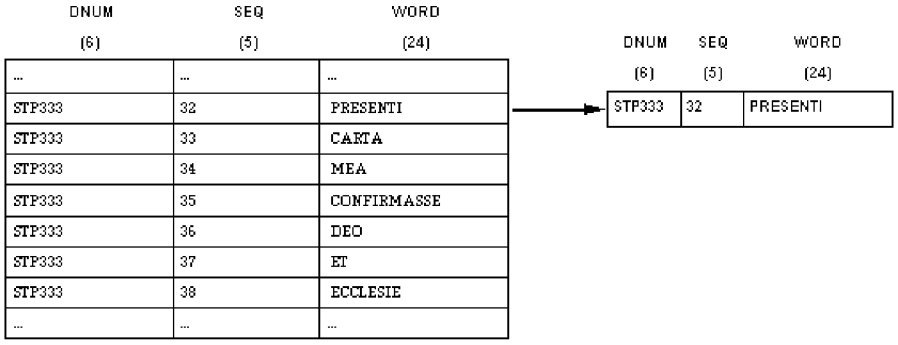
Create a table called UNDATED_DOC in the database and insert undated documents in the format shown in Figure 23a where a portion of document STP333 is shown as an example.

DNUM	SEQ	WORD
(6)	(5)	(24)
...	...	...
STP333	32	PRESENTI
STP333	33	CARTA
STP333	34	MEA
STP333	35	CONFIRMASSE
STP333	36	DEO
STP333	37	ET
STP333	38	ECCLESIE
...	...	...

Figure 23a. Table UNDATED_DOC.

Once the undated document is stored in a table, the dating procedure begins by taking the first word of

the text and analyzing all possible patterns that can be found in the database of patterns created in the previous stage. In the example below, word number 32 of document STP333 will be analyzed to illustrate the procedure which has to be followed for every word of the undated document. The procedure was performed using a C language program against an ORACLE V6 database.



DNUM (6)	SEQ (5)	WORD (24)
...	...	...
STP333	32	PRESENTI
STP333	33	CARTA
STP333	34	MEA
STP333	35	CONFIRMASSE
STP333	36	DEO
STP333	37	ET
STP333	38	ECCLESIE
...	...	...

DNUM (6)	SEQ (5)	WORD (24)
STP333	32	PRESENTI

Figure 23b. Selecting a word of the undated document from table UNDATED_DOC.

The record containing the document ID, sequence number and the word itself is selected. This information is used to scan the table of word patterns in order to find all possible pattern lengths that exist in the table. Processing time is reduced if these steps are carried out before the pattern search begins.
The SQL query used to select all possible pattern lengths starting with 'PRESENTI' is:

```
SELECT  DISTINCT NO_WORDS
FROM    WORD_PATTERNS
WHERE   WORD='PRESENTI'
```

The output of the query is 4, 3.

DNUM (6)	SEQ (5)	WORD (24)	WORD2 (24)	NO_WORDS (3)	NO_WP (5)	WP (255)
...	...	...				
10050	14	PRESENTI		3		PRESENTI CARTA MEA
10050	15	CARTA		2		CARTA MEA
10050	16	MEA				
10050	17	INDENTATA				
10050	18	CONFIRMAVI				
10050	19	P				
...	...	...				
10502	29	PRESENTI		4		PRESENTI CARTA MEA CONFIRMASSE
10502	30	CARTA		3		CARTA MEA CONFIRMASSE
10502	31	MEA		2		MEA CONFIRMASSE
10502	32	CONFIRMASSE				
10502	33	FRATRI				
10502	34	P				
10502	35	PRIORI				
...	...	...				
11126	22	PRESENTI		4		PRESENTI CARTA MEA CONFIRMASSE
11126	23	CARTA		3		CARTA MEA CONFIRMASSE
11126	24	MEA		2		MEA CONFIRMASSE
11126	25	CONFIRMASSE		2		CONFIRMASSE ET
11126	26	ET				
11126	27	IMPERPETUUM				
...	...	...				

Figure 24. Portions of table WORD_PATTERNS showing three word patterns (WP) starting with the word 'PRESENTI' (WORD) and its maximum lengths (NO_WORDS).

This is the end of the first step. Once the different pattern lengths starting with the word 'PRESENTI' are known, it is possible to build patterns of different lengths from the undated document, starting with the word being analyzed ('PRESENTI' in the current example). The table UNDATED_DOC is used to build the patterns.

STEP 2: BUILDING THE SEARCH STRING.

In the previous example, the longest pattern starting with the word 'PRESENTI' is four words in length. Therefore the longest pattern from the undated document starting with the word 'PRESENTI' which can be used to search possible matches in the database has to be the same length. It is called the search string. (This is an example only, patterns starting with word 'PRESENTI' in the real database are longer than four words.)
The query to select the words for the search string is:

```
SELECT  WORD
FROM    UNDATED_DOC
WHERE   DNUM='STP333' AND SEQ BETWEEN 32 AND (32+4-1)
ORDER   BY DNUM, SEQ
```

The output is:

PRESENTI
CARTA
MEA
CONFIRMASSE

Refer to Figure 23a to see table UNDATED_DOC.
When using a procedural language with the database it is possible to store the words in an array for later use to build the search string by concatenating the words with spaces in between. In this example the search string would be 'PRESENTI CARTA MEA CONFIRMASSE'.
In this stage the search string 'PRESENTI CARTA MEA CONFIRMASSE' will be analyzed in descending order from the maximum number of words (4) down to the minimum (3).

STEP 3: SEARCHING FOR THE LONGEST WORD PATTERN.

Select from table WORD_PATTERNS, column WP (Figure 22), those documents containing the search string. The query is:

```
SELECT  DISTINCT DNUM
FROM    WORD_PATTERNS
WHERE   WP = 'PRESENTI CARTA MEA CONFIRMASSE'
```

The output to the query is:

DNUM

10502
11126

The document numbers and the number of words are stored in two working arrays called output_dnum and output_nowords. The arrays have to be large enough to hold as many document numbers as there are dated documents in the database.

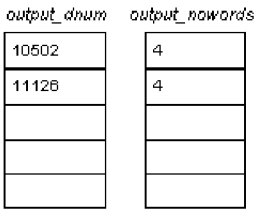


Figure 25. Working arrays.

The search for four-word patterns has ended. The next step is to search for three-word patterns using the same procedure. The search string will be reduced by one word, the table WORD_PATTERNS will be queried again and new documents will be appended to the existing ones in the working arrays.

STEP 4: SEARCHING FOR SHORTER WORD PATTERNS.

Reduce the search string by one word and check if the number of words - 3 in this case - is included in the list of lengths previously found for this particular word (eg. 'PRESENTI'). The new search string is 'PRESENTI CARTA MEA'. Select from table WORD_PATTERNS, column WP (Figure 22) those documents containing the search string. The query is:

```
SELECT  DISTINCT DNUM
FROM    WORD_PATTERNS
WHERE   WP LIKE 'PRESENTI CARTA MEA %'
```

The output to the query is:

```
DNUM
--------
10502
11126
10050
```

Note that the SQL operator LIKE is used in combination with % instead of the = operator because the search string might be embedded in a longer string.
Append only those documents that are not yet in the working arrays. It might be possible to modify the query to select only records that were not selected before if arrays are permitted in the syntax of the SQL statement.
Another word is dropped from the search string if necessary and STEP 4 is repeated until the search string is reduced to the minimum expression.

output_dnum	output_nowords
10502	4
11126	4
10050	3

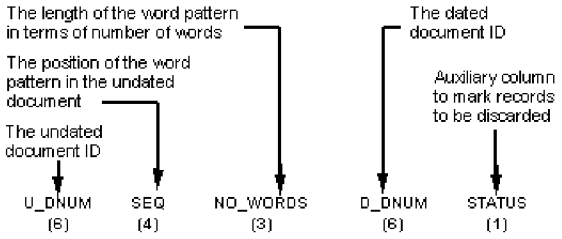
Figure 26. Working arrays.

At the end of the analysis for the word 'PRESENTI', the output arrays should look like the ones in Figure 26. The next step will be to copy the information stored in the working arrays to a working table to eliminate duplication and produce reports.

STEP 5: CREATING A TABLE TO STORE RESULTS.

Create a table UNDATED_REP as follows: The combination of columns U_DNUM, SEQ provides the location of the word pattern in the undated document and the column NO_WORDS provides the length of the pattern. The column D_DNUM identifies the dated document ID where the pattern was found. The STATUS column will be used to mark records that are to be deleted because the word pattern in reference is embedded in a longer pattern.

In Figure 27, table UNDATED_REP contains the results of the analysis made on the word 'PRESENTI'. The process has to be repeated for every word in the undated document. At the end, table UNDATED_REP will contain all the possible patterns that can be matched between the undated document and the database of dated documents.



U_DNUM (6)	SEQ (4)	NO_WORDS (3)	D_DNUM (6)	STATUS (1)
STP333	32	4	10502	
STP333	32	4	11126	
STP333	33	3	10050	

Figure 27. Table UNDATED_REP after being populated from the working arrays.

In Figure 28 the table was filled with results from the analysis of word number 33 of document STP333, which is 'CARTA'. Extra records have been added to show the process of eliminating patterns that are embedded in other longer patterns.

U_DNUM (6)	SEQ (4)	NO_WORDS (3)	D_DNUM (6)	STATUS (1)	
STP333	32	4	10502		PRESENTI CARTA MEA CONFIRMASSE
STP333	32	4	11126		PRESENTI CARTA MEA CONFIRMASSE
STP333	32	3	10050		PRESENTI CARTA MEA
STP333	33	3	10502		CARTA MEA CONFIRMASSE
STP333	33	3	11126		CARTA MEA CONFIRMASSE
STP333	33	2	10050		CARTA MEA
STP333	33	2	11128		CARTA MEA

Figure 28. Table UNDATED_REP. Word patterns represented by columns U_DNUM, SEQ, NO_WORDS are shown at the right side of the table.

STEP 6: ELIMINATING EMBEDDED WORD PATTERNS.

In the process of analysing words from the undated documents, duplicate information will be produced due to the occurrence of embedded word patterns in longer patterns. This step describes the process of eliminating embedded patterns.
Sort the table UNDATED_REP by D_DNUM ASC, SEQ ASC, NO_WORDS DESC, where ASC in SQL syntax means ascending order and DESC means descending order. The table UNDATED_REP is shown below after being ordered.

U_DNUM (6)	SEQ (4)	NO_WORDS (3)	D_DNUM (6)	STATUS (1)	
STP333	32	3	10050		PRESENTI CARTA MEA
STP333	33	2	10050		CARTA MEA
STP333	32	4	10502		PRESENTI CARTA MEA CONFIRMASSE
STP333	33	3	10502		CARTA MEA CONFIRMASSE
STP333	32	4	10126		PRESENTI CARTA MEA CONFIRMASSE
STP333	33	3	11126		CARTA MEA CONFIRMASSE
STP333	33	2	11128		CARTA MEA

Figure 29. Table UNDATED_REP after being ordered.

Once the table is ordered (Figure 29), it is possible to see patterns embedded in longer patterns, for example, pattern 33,2,10050 is embedded in pattern 32,3,10050 (Figure 29). To eliminate this duplication, follow the procedure outlined below.
Take the first record of table UNDATED_REP and store the values in a record variable called var_before. This variable will be used to store temporarily records containing the longest patterns of the undated document, eg. the first record is stored in var_before (Figure 30a).

U_DNUM (6)	SEQ (4)	NO_WORDS (3)	D_DNUM (6)	STATUS (1)	
STP333	32	3	10050		*var_before*

Figure 30a. Variable var_before with data taken from the first record of table UNDATED_REP(Figure 29).

Take the second record of the table (Figure 30b). Compare both records. If both D_DNUM are equal then proceed; if the next two items are true, update column STATUS with the value 'D'. 'D' stands for 'Discarded'. Records so marked will be deleted.

(a) NO_WORDS + SEQ <= var_before.NO_WORDS + var_before.SEQ
(b) SEQ >= var_before.SEQ AND SEQ <= var_before.SEQ + var_before.NO_WORDS - 1

U_DNUM (6)	SEQ (4)	NO_WORDS (3)	D_DNUM (6)	STATUS (1)
STP333	33	2	10050	

Figure 30b. Second record of table UNDATED_REP.

U_DNUM (6)	SEQ (4)	NO_WORDS (3)	D_DNUM (6)	STATUS (1)
STP333	33	2	10050	D

Figure 30c. Second record of table UNDATED_REP after having marked 'DISCARDED'.

Take the third record and compare it with variable var_before. If both records do not have the same D_DNUM, then make the variable var_before equal to the third record. Bring forward a fourth record and compare it with variable var_before as indicated before for first and second records. Continue the process until the entire table is done and delete all records marked with STATUS='D' (Figure 31).

U_DNUM (6)	SEQ (4)	NO_WORDS (3)	D_DNUM (6)	STATUS (1)	
STP333	32	3	10050		PRESENTI CARTA MEA
STP333	33	2	10050	D	CARTA MEA
STP333	32	4	10502		PRESENTI CARTA MEA CONFIRMASSE
STP333	33	3	10502	D	CARTA MEA CONFIRMASSE
STP333	32	4	10126		PRESENTI CARTA MEA CONFIRMASSE
STP333	33	3	11126	D	CARTA MEA CONFIRMASSE
STP333	33	2	11128		CARTA MEA

Figure 31. Table UNDATED_REP after marking records with embedded patterns.

The comparison of the undated document with the database of dated documents has been accomplished. This is the end of the second stage.

STAGE 3. Dating an Undated Document

This is an example of how to date a document using the tables produced in the previous stages. Three steps will be performed:
Step 1: Selection of valid dates by document type
Step 2: Weighting of frequencies according to the number of words in the pattern and ranging dates in five-year periods.
Step 3: Reporting the best range.

In Figure 32, a few records of table UNDATED_REP, produced in the previous stage - together with some others - are shown. The table DATED_DOC is introduced now as the master table containing the information related to dated documents. It includes column D_TYPE (document type, in which two values are exhibited: TR designates transfers and ** designates other types) and D_DATE (Document date).

U_DNUM (6)	SEQ (4)	NO_WORDS (3)	D_DNUM (6)	STATUS (1)	
STP333	30	5	10156		
STP333	30	5	10158		
STP333	30	5	10576		
STP333	30	5	11068		
STP333	30	5	10451		
STP333	30	5	10536		
STP333	30	5	11173		← Discard
STP333	32	4	10502		
STP333	32	4	11126		
STP333	32	3	10050		← Discard
STP333	33	2	11128		← Discard

D_DNUM (6)	D_TYPE (2)	D_DATE (4)
10156	TR	1225
10158	TR	1225
10576	TR	1230
11068	TR	1240
10451	TR	1254
10536	TR	1254
11173	**	1260
10502	TR	1238
11126	TR	1230
10050	**	1267
11128	**	1285

Figure 32. Table UNDATED_REP (Left) has been modified using column D_TYPE from table DATED_DOC (Right).

The table UNDATED_REP is intended for the storage of matching patterns between the undated and dated documents, and will therefore contain information for more than one undated document. The procedure outlined next will lead to the selection of a subset of records from this table and the creation of another table for every undated document. That table will be introduced next.

STEP1: SELECTION OF VALID DATES BY DOCUMENT TYPE.

On the assumption that the undated document is a transfer (TR), discard those records from table UNDATED_REP where column D_DNUM contains documents having D_TYPE column different from TR in the DATED_DOC table (Figure 32). Put the results in table STP333 as shown in Figure 33.
In Figure 33, a subset of table STP333 is shown after having been loaded with information from table UNDATED_REP. Note that it is no longer necessary to include column U_DNUM since this table is unique for document STP333. This table now contains information referring to documents which are transfers.

SEQ (5)	NO_WORDS (3)	D_DNUM (6)	STATUS (1)
30	5	10156	
30	5	10158	
30	5	10576	
30	5	11068	
30	5	10451	
30	5	10536	
32	4	10502	
32	4	11126	

Figure 33. Table STP333.

It is useful at this time to present the information contained in tables STP333 (Figure 33) combined with table DATED_DOC (Figure 32). The following query will produce the data shown in the report of patterns (Figure 34). Only the format commands were omitted from the following query written in SQL.

```
SELECT  X.SEQ, X.NO_WORDS, COUNT(DISTINCT D_DATE) DATES,
        MIN(Y.D_DATE) EARLY, MAX(Y.D_DATE) LATE,
        MAX(D_DATE) - MIN(D_DATE) DIF,(MAX(D_DATE) -
```

```
        MIN(D_DATE))/COUNT(DISTINCT D_DATE)RATIO
FROM    STP333 X, DATED_DOC Y
WHERE   X.D_DNUM=Y.DNUM
GROUP   BY X.SEQ, X.NO_WORDS
ORDER   BY 7 DESC
```

In Figure 34, the report of patterns taken from table STP333 joined with table DATED_DOC (Figure 32) shows the number of distinct dates found, the early date, the late date, difference or lifetime, and the ratio of years of lifetime divided by distinct dates.
In Figure 34, the encircled numbers show which patterns should be discarded from the analysis.

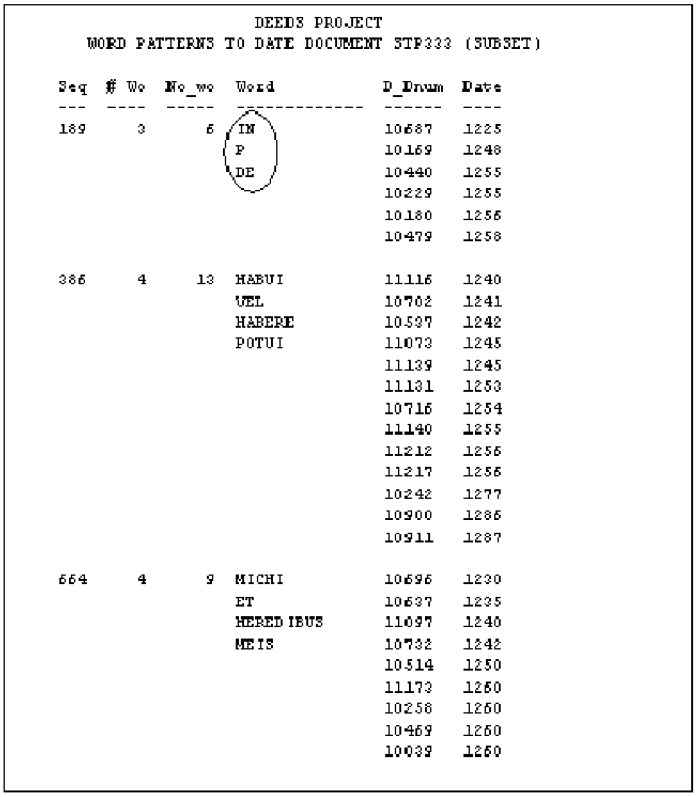
REPORT OF PATTERNS
DOCUMENT STP333 (SUBSET)

SEQ	NO_WORDS	DATES	EARLY DATE	LATE DATE	DIF	RATIO
674	3	3	1235	1368	133	44.33
569	3	4	1254	1362	108	27.00
190	3	2	1254	1288	34	17.00
343	3	4	1225	1275	50	12.50
749	3	7	1243	1325	82	11.71
695	3	4	1230	1275	45	11.25
608	3	2	1235	1255	20	10.00
287	3	8	1225	1294	69	8.63
14	4	7	1230	1284	54	7.71
189	3	5	1225	1258	33	6.60
311	3	10	1230	1284	54	5.40
664	4	6	1230	1260	30	5.00
386	4	11	1240	1287	47	4.27
20	5	4	1230	1243	13	3.25
736	4	2	1256	1261	5	2.50
631	3	3	1243	1250	7	2.33
8	3	2	1256	1260	4	2.00
AVERAGE (BASED ON TOTAL)			1239	1291		

Figure 34. Report of patterns from document STP333, indicating the patterns (SEQ,NO_WORDS), and their EARLY DATE, LATE DATE, lifetime (DIF), number of dates(DATES) and ratio (DIF/DATES).

The process of selecting word patterns is arbitrary and for this particular example is as follows:
(a) Patterns with a ratio > 10 are eliminated because a high ratio indicates that the pattern does not have a constant currency. An average of one occurrence every 10 years was considered acceptable. See column RATIO in figure 34.
(b) Patterns with a lifetime > 50 years are eliminated. In this particular document there were a number of patterns with a lifetime shorter than 50 years which were considered significant and helpful. Patterns with a longer lifetime could be considered when short-life patterns cannot be found.
(c) Patterns occurring less than 5 times are eliminated because of lack of currency. This number is determined by dividing the maximum 50-year lifetime by the minimal 10-year currency. In figure 34, only three word patterns are considered useful; the rest will be eliminated.

After selecting the best patterns according to ratio, lifetime and number of dates, a final selection can be made. Not all the remaining patterns have sufficient meaning to be considered appropriate; their elimination will be performed manually. In Figure 35 the pattern 189,3 is eliminated because the phrase is too vague.



DEEDS PROJECT
WORD PATTERNS TO DATE DOCUMENT STP333 (SUBSET)

Seq	# Wo	No_wo	Word	D_Dnum	Date
189	3	6	IN	10687	1225
			P	10169	1248
			DE	10440	1255
				10229	1255
				10180	1256
				10479	1258
386	4	13	HABUI	11116	1240
			UEL	10702	1241
			HABERE	10537	1242
			POTUI	11073	1245
				11139	1245
				11131	1253
				10716	1254
				11140	1255
				11212	1256
				11217	1256
				10242	1277
				10900	1286
				10911	1287
664	4	9	MICHI	10696	1230
			ET	10637	1235
			MEREDIBUS	11097	1240
			MEIS	10732	1242
				10514	1250
				11173	1250
				10258	1260
				10469	1260
				10939	1260

Figure 35. Examples of word patterns after the screening process by ratio, lifetime and minimum dates. The encircled pattern is vague and may be dropped.

In Figure 36a, a two-dimensional array called **undated_arr** is used to store the number of patterns that exist for every given date. The rows in the array represent dates. The columns in the array correspond to the number of words in the patterns. The Figure shows that two five-word patterns from the undated document had counterparts dated 1225 in the database, that one four-word and one five-word pattern had counterparts in 1230, and so on.

At the bottom of Figure 36a there is a row of factors. Factors are stored in a one-dimension array and are used in the next step to give weight to the frequencies stored in the array **undated_arr**, producing points (Figure 36b).

undated_arr
(frequencies)

	2	3	4	5	6	...
...						
1225				2		
...						
1230			1	1		
...						
1238			1			
...						
1240				1		
...						
1254				2		
...						
FACTOR	0	1	1.2	1.4	1.6	...

Figure 36a

undated_arr
(points)

2	3	4	5	6	...	*TOTAL POINTS*	*TOTAL ACUM 5-YEAR*
			2.8			2.8	2.8
		1.2	1.4			2.6	2.6
		1.2				1.2	1.2
			1.4			1.4	2.6
			2.4			2.4	2.4

Figure 36b

STEP 2: WEIGHTING FREQUENCIES ACCORDING TO THE NUMBER OF WORDS IN THE PATTERN AND RANGING DATES IN FIVE-YEAR PERIODS

Figure 36b shows the array **undated_arr** after being modified by the factors shown at the bottom of Figure 36a. The factors were chosen to emphasize the value of longer patterns. In this example, a factor of 0 discards two-word patterns, gives four-word patterns a value 20% more than three-word patterns, etc. Also in Figure 36b the total points collected for each year are shown.
The column headed TOTAL ACUM 5-YEAR shows the total points accumulated at the end of a five year period. The period bearing the highest accumulation of points indicates the most likely range for the document's composition. The length of the best possible period has been chosen arbitrarily as five years for this particular example.

STEP 3: REPORTING THE BEST RANGE.

After the process of weighting frequencies has been completed, the data are ready to be analyzed. In the graph below, bars represent points collected by dates in a period of five years ending in that year. This period is defined arbitrarily and points can be accumulated in longer periods. The data presented in the graph correspond to document STP333.

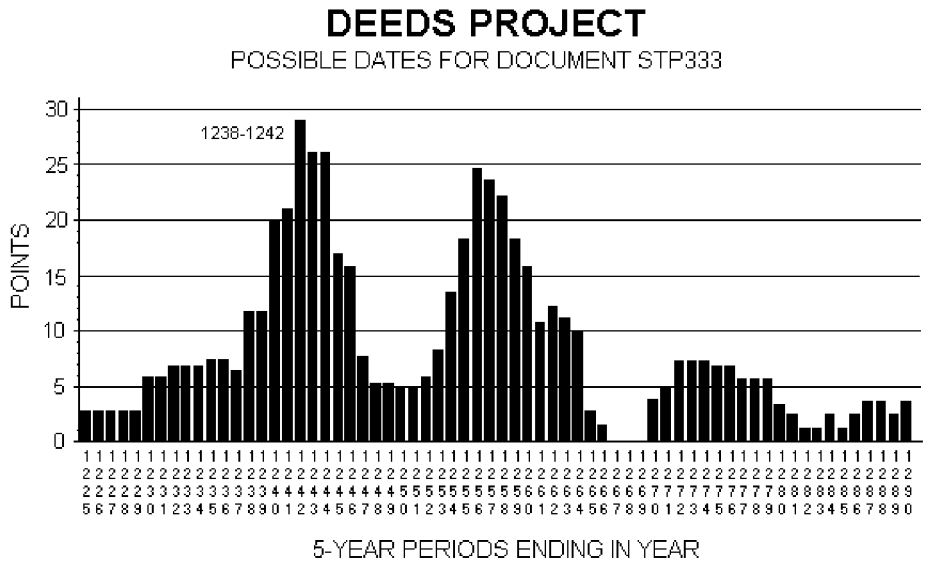


Figure 37. Points collected by document STP333 in five-year periods. The highest bar, with 29 points corresponds to the period 1238-1242.

According to the dating process, the document was probably written between 1238 and 1242(highest bar in Figure 37). The next two highest bars (1239-1243 and 1240-1244) support the accuracy of this process. Document STP333 is known to have been written in 1239.

CONCLUSION.

The process of selecting valid dated patterns is the key to obtaining an accurate date. Many of the matching patterns found in the document cited had a short lifetime, which is highly desirable. Without such patterns, the selection of valid patterns tends to high ratios (lifetime/distinct dates), longer lifetime and less distinct dates, making the dating of the document more speculative. In addition, the existence in the database of a considerable number of dated documents of the same type (TR) provided the dating process with a good series of comparable patterns.

Figure 38. Document STP333 adjusted for analysis. Text has been standarized, names of persons and places have been replaced with the letter P, numbers have been replaced with # and punctuation has been removed. Underlining indicates patterns used for dating.

Omnibus Christi fidelibus P salutem in domino Noverit universitas vestra me karitatis intuitu pro salute anime mee et animarum omnium antecessorum et successorum meorum et omnium fidelium concessisse dedisse et hac presenti carta mea confirmasse deo et ecclesie P et P decano et canonicis dicte ecclesie totum mansum meum in villa de P sub bosco meo cum # gardinis et quandam particulam predicti bosci mei que iacet in # partibus predicti mansi et predictorum gardinorum scilicet versus orientem occidentem et aquilonem et habet in latitudine cum trenchato ad fossatum dictorum decani et canonicorum assignato ab exteriori latere fossati dicti mansi versus P usque ad boscum meum qui est versus aquilonem # perticas et # pedes cum pertinentiis per perticam # et se extendit in longitudine a campo qui vocatur P a parte orientali usque ad boscum P quod est versus occidentem et per totum versus austrum usque ad terram decani et canonicorum salvo michi # chemino versus boscum meum inter boscum dictorum decani et canonicorum et dicti P de latitudine # pedum Preterea concessi et dedi dictis ecclesie decano et canonicis # acras terre arabilis quarum # iacent in P de quibus #

acre iacent in P et residuum in quarantena que vocatur P et # acre in campo qui vocatur P iuxta predictum cheminum et # acre iacent versus occidentem proxime campo qui dicitur P versus gravam P in predicta villa de P Concessi etiam eisdem ecclesie decano et canonicis exitum quendam et viam infra fossatum quod se extendit in longum iuxta campum qui vocatur P una cum haya et fossato illo continentem latitudinem # perticarum infra dictum fossatum et novum P et extendit se in longitudinem a bosco dictorum decani et canonicorum usque ad croftam que vocatur P Ad supplementum autem defectuum terrarum arabilium superius annotatarum minus perfecte quam annotantur mensuratarum assignavi dictis decano et canonicis totam illam croftam qui vocatur P cum haiis fossatis clauso pasturis et liberis introitibus et exitibus et aliis omnibus pertinentiis sine aliquo retenemento Concessi insuper et dimisi dictis decano et canonicis totum pratum meum quod vocatur P et totum pratum meum quod vocatur P et totum pratum meum quod vocatur parvum pratum cum tota pastura et # acris terre arabilis quod P tenuit de me et # solidos annui redditus percipiendos de managio quod P tenet et quicquid habui vel habere potui in prenominatis pratis pascuis et terris infra fossatum qui circuit campum P et regiam stratam versus aquilonem et idem fossatum et pasturam P versus occidentem et sepem qui se extendit in longum inter dicta prata et campum de P et versus orientem sicut rivulus qui descendit per P dividit inter dicta prata pasturas et terram arabilem et terras hominum de P cum eisdem sepibus et fossato ad dicta tenementa pertinentibus Concessi etiam et dimisi dictis ecclesie et decano et canonicis illam particulam terre mee que iacet extra fossatum ipsorum decani et canonicorum versus gravam P salvo # chemino de latitudine # perticarum per quod licebit dictis decano et canonicis et eorum servientibus cariare et fugare usque ad regiam stratam et terras suas et prata sua P Preterea concessi et dedi prescriptis ecclesie decano et canonicis # acras bosci mei cum pertinentiis in villa de P continuas et proximas bosco dictorum decani et canonicorum quarum longitudo se extendit a chemino quod est inter boscum dictorum decani et canonicorum et boscum P ex parte occidentis usque ad campum meum qui vocatur P ex parte orientis per perticam # Concessi insuper et dedi predictis ecclesie decano et canonicis totam croftam meam que vocatur P in dicta villa iacentem scilicet inter longam P et croftam P et # capud abuttat super boscum et aliud super viridem viam tenenda et habenda dictis ecclesie decano et canonicis et eorum successoribus vel quibuscumque illa assignare voluerint integre scilicet et quiete in liberam puram et perpetuam elemosinam omnia predicta concessa et donata sine omni secta curie mee et sine omni redditu scutagio gelda tallagio scotagio servicio et quacumque exaccione quocumque nomine censeat michi et heredibus meis faciendis et aliis quibuscumque Ego igitur predictus P et heredes mei omnia predicta tenementa et predictas terras cum omnibus pertinentiis suis dictis ecclesie dicto decano et canonicis contra omnes homines warantizabimus inperpetuum Et defendemus et acquietabimus versus omnes capitales dominos et omnes alios de residuis terris nostris de omnibus serviciis et quibuscumque demandis et exaccionibus Ut vero hec mea concessio et donacio rata sit et stabilis inperpetuum presens scriptum sigilli mei impressione corroboravi Hiis testibus P et aliis Acta anno regni regis P # regis et martiris*

*ms. habutat

Notes

1. F.M. Stenton, ed., *Transcripts of Charters relating to the Gilbertine Houses of Sixle, Ormsby, Catley, Bullington, and Alvingham*, Publications of the Lincoln Record Society for 1920, 18 (Horncastle, 1922), cited hereafter as Stenton.

2. Stenton, pp. x-xi.

3. Stenton, p. xxxiii.

4. Stenton, p. xxxiv.

5. Stenton, p. xviii.

6. Stenton, pp. xviii-xix.

7. ``When all other evidence fails, the terms in which a parcel of land is defined will often decide whether a charter belongs to the time of Henry II or to that of Henry III" (Stenton, pp. xix-xxi).

8. Stenton, pp. xxv-xxvii, xxxiii.

9. Stenton, p. xxiii.

10. Stenton, p. xxx.

11. R.B. Patterson, ed., *Earldom of Gloucester Charters: The Charters and Scribes of the Earls and Countesses of Gloucester to A.D. 1217*(Oxford, 1973), p. 30, cited hereafter as *Gloucester*; Philippa Brown, ed., *Sibton Abbey Cartularies and Charters*, 1, Suffolk Record Society, Suffolk Charters, 7 (Woodbridge, Suff., and Dover, N.H., 1985), p. 147 cited hereafter as *Sibton*; Cf. Stenton, p. xxviii.

12. *Gloucester*, p. 21; *Sibton*, pp. 146-47; Christopher Harper-Bill, ed., *The Cartulary of the Augustinian Friars of Clare*, Suffolk Records Society, Suffolk Charters, 11 (Woodbridge, Suff., and Rochester, N.Y., 1991), p. 22 cited hereafter as *Clare*.

13. *Clare*, p. 21.

14. *Gloucester*, pp. 24-25; *Clare*, p. 22.

15. Stenton, p. xxx; *Sibton*, p. 148.

16. Stenton, p. xxvii; Una Rees, ed., *The Cartulary of Haughmond Abbey*(Cardiff, 1985), p. 4 and n. 28 cited hereafter as *Haughmond*.

17. *Sibton*, p. 147.

18. *Gloucester*, pp. 22-23.

19. *Clare*, p. 22.

20. *Clare*, p. 21.

21. Wendy Davies, ed., *The Llandaff Charters*(Aberystwyth, 1979), p. 7, cited hereafter as *Llandaff*.

22. *Llandaff*, p. 7.

23. See B.R. Kemp, ed., *Reading Abbey Cartularies, British Library Manuscripts: Egerton 3031, Harley 1708 and Cotton Vespasian E XXV*, 1: *General Documents and those relating to English Counties other than Berkshire*, Royal Historical Society, Camden Fourth Series, 31 (London, 1986), p. 20 cited hereafter as *Reading*, 1.

24. On the genuine nature of royal confirmations, see Marjorie Chibnall, ed., *Select Documents of the English Lands of the Abbey of Bec*, Royal Historical Society, Camden Third Series, 73 (London, 1951), p. x, cited hereafter as *Bec*.

25. *Llandaff*, pp. 17, 91.

26. *Bec*, p. x; *LLandaff*, pp. 10, 17, 25-26; Una Rees, ed., *The Cartulary of Shrewsbury Abbey*, 2 vols. (Aberystwyth, 1975), 1:xvii, cited hereafter as *Shrewsbury*.

27. Michael Gervers, *The Hospitaller Cartulary in the British Library (Cotton MS Nero E VI)*, Studies and Texts 50(Toronto, 1981), p. 250; see also *Reading*, 1:19.

28. *Haughmond*, p. 4; *Reading*, 1:4, 7.

29. J.L. Fisher, ed., *Cartularium Prioratus de Colne*, Essex Archaeological Society, Occasional Publications, 1, (Colchester, 1946), p. iv; *Llandaff*, pp. 31, 33, 34; *Reading*, 1:4.

30. *Shrewsbury*, p. xvii.

31. Michael Gervers, ed., *The Cartulary of the Knights of St. John of Jerusalem in England*, 2 vols., Records of Social and Economic History, n.s. 6 and 23 (London, 1982 and 1996), 2, notes to nos. 84 and 96 cited hereafter as *Knights*.

32. See, for example, A.N. Webb, ed., *An Edition of the Cartulary of Burscough Priory*, Chetham Society, 3rd ser., 18(Manchester, Eng., 1970), p. 14, cited hereafter as *Burscough*; *Reading*, 1:4.

33. S.F. Hockey, ed., *The Beaulieu Cartulary*, Southampton Records Series, 17 (Southampton, Eng., 1974), p. xxvi; Audrey M. Woodcock, ed., *Cartulary of the Priory of St. Gregory, Canterbury*, Royal Historical Society, Camden Third Series, 98 (London, 1956), p. ix; *Reading*, 1:3-4.

34. See, for example, C.D. Ross, ed., *The Cartulary of Cirencester Abbey, Gloucestershire*, 1 (London, 1964), pp. 221-22, dating note to no. 232/370, and vol. 3, ed. M. Devine (London, 1977), p. 812, dating note to no. 306, cited hereafter as *Cirencester*.

35. Stenton, p. xxxii.

36. Stenton, p. xxxii.

37. Stenton, p. xxxii.

38. See, e.g., *Burscough*, *Langley*, and *Reading*, 1.

39. Stenton, pp. xvii, xxxiv.

40. M.T. Clanchy, *From Memory to Written Record: England, 1066-1307*, 2nd Ed.(Oxford and Cambridge, Mass., 1993), p. 327.

41. See M.J. Franklin, ed., *Cartulary of Daventry Priory*(Northampton, 1988), p. 1, *Langley*, p. xvi, and the entire Suffolk Records Society series of Suffolk Charters.

42. *Haughmond*, p. 18; P.R. Coss, *The Early Records of Medieval Coventry*, Records of Social and Economic History, n.s. 11(London, 1986), pp. xiv, 65-66, cited hereafter as *Coventry*.

43. *Reading*, 1:23.

44. See Gerald A.J. Hodgett, ed., *The Cartulary of Holy Trinity Aldgate*, London Record Society Publications 7 (Leicester, Eng., 1971), cited hereafter as *Aldgate*; Nelly J.M. Kerling, ed., *Cartulary of St Bartholomew's Hospital, Founded 1123* (London, 1973), cited hereafter as *St Bartholomew's*; F.W. Weaver, ed., *A Cartulary of Buckland Priory in the County of Somerset*, Somerset Record Society 25 (London, 1909), cited hereafter as *Buckland*.

45. *Reading*, 1:23.

46. The extent of stylistic variation in charters is noted in *Gloucester*, pp. 21, 30. Such variants lead in some editions to the unfortunate custom of calendaring (*Langley*, p. xvi).

47. London, British Library, MS Cotton Nero E. VI, edited in *Knights*.

48. All chronological references in this section are to approximate (circa) dates.

49. The three documents in which the phrase appears concern nearly contiguous parishes in north-central Essex.

50. It does, however, occur in a Middlesex document issued in 1345 (*Knights*, 2, no.4).

51. M. Gervers, ``The Textile Industry in Essex in the Late 12th and 13th Centuries: A Study Based on Occupational Names in Charter Sources," *Essex Archaeology and History* 20 (1989), pp. 34-73 (esp. p. 38).

52. The seventy-five represent those entries in *Knights*, 2, that had been copied without their witness lists.

53. **DEEDS** is an acronym for Documents of Essex England Data Set.

54. Marion Gibbs, ed., *Early charters of the cathedral church of St. Paul, London*, Royal Historical Society, Camden Third Series, 58 (London, 1939), no. 333.

55. Thus `Iohannes molendinarius', `Iohannes filius Roberti molendinarius' and `Iohannes filius Roberti molendinarius de Colecestria' would each be replaced by a single letter `P'.