This preprint is partly from an article in preparation: ‘Time in the ancient Icelandic republic’. The conception of time has three main aspects: past, present, and future. How we conceive time depends very much on our cultural background. While studying anthropology in London I once asked a fellow student of the Ibo tribe in Ghana what he had found most surprising when he came to England, and he answered: how the little round devil on your wrist directs the whole of society. I had some understanding of the African conception of time, having as a child been raised in part in a traditional Icelandic farming society. If we try to analyse how time has functioned globally, we find two main traits, the cyclic one and various types of linear form. The cyclic time conception has some universal characteristics, such as the on-shore and off-shore monsoon in South-East Asia, the winter and summer seasons in North-Western Europe, and the rainy and dry seasons in Central Africa. These geographical examples provide people with a rhythm for their economic and cultural life. Besides the sun, the most important indicator of time is the moon. All over the earth we can see the ‘man in the moon’. With regular intervals, the moon appears, grows, becomes full, and gradually disappears only to repeat its well-known route every month.

If we try to find the roots of the Western world’s time system we must place ourselves back in time in the eastern part of the Mediterranean. As far back as our knowledge goes we find that the peoples here had found that after the elapse of nineteen years the full moon appeared on the same days of the year with only a few hours of discrepancy. It is remarkable that, in the brilliant Maya culture, the very same moon cycle of nineteen years had been observed. We find the earliest traces of this moon cycle in sources dating back to around 600 B.C. in the eastern part of the Mediterranean. It seems that already at that time each ‘time unit’ (year) started around what we call the first of September, presumably because the cyclic flood of the Nile begins at that time of the year. This is probably also the reason why the Egyptians— unlike most other peoples in Antiquity—based their time reckoning on the year. They knew that the year was about six hours longer than 365 days, and to compensate for that they inserted an extra day every fourth year (leap year). In this connection it is indeed interesting to note that two hundred years ago archaeologists found in the Suez area a stone from about the middle of the third century B.C., on which are written rules for placing the leap year correctly.

During his stay in Egypt 45-44 B.C., Julius Caesar was inspired to make amendments to the primitive old calendar of the Romans; and he was particularly impressed by the system of leap years. Back in Rome, Caesar therefore introduced what we call the Julian calendar. In the beginning, the first month of the year was March, named after the Roman god of war; but later the New Year was moved to the first of January, named after another Roman deity.

Far back in time, in Egyptian society, the Pharaohs introduced for administrative purposes a cycle of three years, later changed to fifteen years. As
mentioned above, each year began around the first of September. Under the name of Indiction, this fifteen-year cycle has been used for a very long time in European history. The East Roman emperors adopted the indiction cycle, and from there the Russian church came to give it a long life. In the western part of the Roman Empire the papacy assumed the role of leading the church, and here the indiction was the most commonly used indicator of time until 1088.

The ancient Egyptians, of course, did not have the chronological problem of Easter; but in Christianity Easter was the primary event of the year. Easter day was fixed as the first Sunday after the first full moon after the vernal equinox. With the week of seven days and the leap year every fourth year, one was led to the solar cycle of $4 \times 7 = 28$ years. After twenty-eight years the Sundays, say, return to the same dates in the Julian calendar. By combining the moon cycle of nineteen years with the solar cycle of twenty-eight years one arrived at the Great Easter Cycle of $19 \times 28 = 532$ years (no less will do because 19 and 28 have no common divisor). After an interval of 532 years, Easter day thus returns to the same date as the Julian year.

It was in connection with the date of Easter that a new factor entered into the practice of the Christian religion. At the beginning of the sixth century, Dionysius—a Scythian monk in Rome—chose to abandon the use of the Roman emperor's reign for the enumeration of years and adopted instead the birth of Christ as the starting point for his Easter table. It would, however, take a very long time before the Anno Domini system came into use, even in the parts of Christian Europe that approximated to the western Roman empire. Gradually, though, this did come about, and for that we may thank the venerable Bede of Northumbria.

When we wish to understand the development of time reckoning in Western Europe we must go to the North of England. Around 800 we find a cultural centre in these outskirts of the former Roman Empire. It was in York that Roman Britain had a sort of capital. Even after the arrival of the Teutons the monasteries here had some advantages in keeping contact with Rome. Though never part of the empire, Ireland was early christianized to the Coptic faith. Northumbria and Ireland combined did give possibilities for literary achievements. And here in this cultural melting-pot the most brilliant learning in the early Middle Ages developed. At the seemingly isolated monastery of Jarrow the monk and historian Bede was occupied with the problem of Time. Already at the Synod of Whitby—which according to Bede's chronology took place in Yorkshire in 665 (see Stenton 1947)—one of the most important questions under discussion was chronology, particularly the question of when to celebrate Easter. Through his connection with Rome, Bede was acquainted with the new way of counting time with the aid of a continuous time scale beginning from the birth of Christ.

It is doubtful whether this idea would ever have become the established form of dating within the Roman Catholic church had not Bede been such a prolific and powerful intellectual. In my opinion, Bede preferred this way of dating his material because—especially when writing his church history—he had one archbishop (of Canterbury), but seven English kings. Being able to present his narrative with reference to a single time-scale beginning at the birth of Christ must have been an enormous help to Bede. And his influence on English society in posterity is manifest. Not only were historical writings and annals marked by the new chronological
approach, but so were various types of official or semi-official documents. Apart from England itself, the cultural activity within the Northumbrian monasteries sent several highly learned pupils to Northern France.

The new Viking colony of Iceland was also soon influenced by Anglo-Norman culture. Already from about 930 the young republic of Iceland had institutionalised a state official, whose years of office formed the backbone of Icelandic society for more than three centuries to come. Here the succession of law-speakers (lögögumenn) had traits similar to those of the consuls in the Roman republic, especially in creating a continuous linear time-scale. In this connection it is remarkable that, in the series of law-speakers, there is never a gap, nor an overlap, such as we often encounter when dealing with lists of kings, archbishops, and even popes. The office of law-speaker is held from a certain date in early July, and generally for three years, after which a successor takes over on the very same date. Ari fróði is very conscious of the chronological advantages offered by the institution of law-speakers, and he frequently states during whose office an event took place. In the literature of the republic after Ari's time, the period of office of the law-speaker is again often mentioned as a background for the events narrated.

It was through the introduction of Christianity that Iceland got into contact with literacy. Latin was the key to the European intelligentsia, but although the Icelanders chose to adopt the Latin alphabet, their literary activities were performed in their native tongue. Formally, Christianity was brought to Iceland by Olaf Tryggvason, king of Norway 994—999. Though of Norwegian royal stock, Olaf was raised in Russia, where he was christianised as a child to the East Roman faith. After exercising vigorous Viking politics in the Baltic he turned westward to Britain, where the English king confirmed him. With the help of English clergymen he christianised Norway as well as the Orkneys, the Faroes, Iceland, and Greenland.

In the case of Iceland, the law-speaker at the time played an impressive role. According to Ari's description the adoption of the new religion was not so much a spiritual conversion, but rather a matter of politics. In the beginning the new faith was taught by prelates from both the Roman and the Eastern church. Ari tells us about some of these that they stayed in Iceland for many years. Several of the guest priests in the early Christian period were English or Norman. Very likely it was through such guest prelates that the young Sæmundr Sigfússon went to France and studied there for several years at a sort of monastery school. With the aid of the list of law-speakers we can date Semundr's stay in France to the time shortly after the political union of England and Normandy was established in 1066. Sæmundr's knowledge of an Anglo-Saxon chronicle hereby becomes manifest. (I shall return to Sæmundr later.)

The first Icelandic historical writings with which we are acquainted to-day are Ari fróði's two books on the history of early Iceland. Ari is also proficient in the Anglo-Saxon. As a solid chronological mark he chooses the death of the Anglo-Saxon king Eadmund in 870 (or 869 in our calendar), and computes from this the time of the first settlement of Iceland (Einarsdóttir, 1964, 57-71). Ari's first book on the history of Iceland is lost; but in the prologue to Heimskringla Snorri gives a very brief account of its content. He says that Ari gave the first dating by year (árasal) of the Christianisation of Iceland. Ari had also told about the early Nordic kings. His second Íslendinga bók is preserved; it is mostly about Iceland and focuses on the new faith
and its institutional development. This booklet on the history of Iceland is the earliest of its kind in the Nordic world; and apart from the Anglo-Saxon sources Ari's treatment must be considered to be his own creation. To some extent the venerable Bede was in a similar situation. Though rather inexpert in literature, I cannot help feeling that there are traits in Ari's composition reminiscent of Bede's church history. Both authors are extremely cautious in verifying their information and naming their witnesses. Both had mostly to be content with oral tradition, and one feels at times a painstaking strive for qualifying their witnesses.

In comparing Ari and Bede with the Norwegian and Danish pioneers as writers of the history of their fatherland, Theodricus refers to the Icelanders' competence in chronology; and in the prologue to his Gesta Danorum, Saxo says that he finds Icelandic skaldic poetry highly important as a historical source. Both authors are also visibly influenced by the Germanic cultural tradition, whereas Bede and Ari first and foremost represent the tradition in their own country. Saxo expresses dislike of having to bother much about time; and there is virtually no chronology in his Gesta, even though he could have drawn on the rich annalistic material for the period of the Danish rule in England.

By the time of his death in 1148 Ari had brought to his prospective readers five anno Domini dates. In addition to his two books he wrote a document, dated 1143, about clergymen of noble kin, ten from each quarter of Iceland. But less than half a century after Ari's time there came new rules for determining the anno Domini. The Icelanders rejected the anno Domini derived from their friend Bede of Northumbria, and the new conventions were introduced simultaneously in both Icelandic bishoprics. Already from the end of the eleventh century we have preserved in Iceland a computus based on the solar cycle and with New Year on the 25th of December (instead of the first of September). But the most surprising change is that Jesus Christ is now said to have been born in the year 8 (instead of the year one, as in Bede's chronology).

This new starting point for the general time-scale is usually ascribed to an astronomer from Alsace-Lorraine by the name Gerlandus. He was highly respected; and even the papacy complied for some time with the anno Domini according to Gerlandus. The earliest example of an A.D. according to Gerlandus within Icelandic literature is the year of death of Saint Þorlákr, bishop of Skálholt, as given in his saga. A later example is the collective historical work Húngrvaka, in which the lives of all the bishops of Skálholt from the earliest times and up to then are described. Still later we have Bishop Páll's saga, in which the years of death are likewise computed according to Gerlandus. Thus Ari's datings of the deaths of the two earliest bishops have been converted to the new time-scale of Gerlandus by subtracting seven years from each A.D. as computed according to Bede. In this connection it is interesting to observe that, along with the new anno Domini we are also told in these examples about the day of the week of a specified day of mass with relation to the event.

From Skálholt we have a total of seven datings by year according to Gerlandus, and two of these are redatings from Ari, as just described. From Hölar bishopric we have five datings, of which two are redatings from Ari. The latest of these anno Domini from Hölar is found in the priest-saga of bishop Guðmundr Arason. The saga is supposed to have been written by Abbot Lambkarr, chancellor to the bishop.
In *Heimskringla*, Snorri never uses *anno Domini*; but instead builds up an internal relative chronology (Einarsdóttir, 1964, 276-292) which in most cases permits a dating of the material which is just as precise as one arrived at by use of a time-scale. For many years Snorri had with him in Reykholts a former brother at the monastery of Þingeyri by the name of Styrmir, who later became abbot, and about whom we know that he used Gerlandus years in his *Sverrissaga*.

We can only guess why Snorri did not want to use the prevailing system of dating at his time. Personally, I think that he rejected having to change Ari's numbers. Snorri's nephew Sturla Þórðarson often stayed at Reykholts; and later Sturla, in turn, had as a resident with him on his farm Staðarhóll the above-mentioned Abbot Lambkarr. Like his uncle, Sturla never gave any *anno Domini* dates; but he did adhere to another Icelandic method of precise dating of the events without the use of a time-scale. In all the above twelve examples of an A.D. according to Gerlandus, the day of the week is stated, and the event is related chronologically to a specified feast-day, or church festival. Such combined information allows us to find the precise year of the event, once an approximate year is known. Thus one can convert such a dating to the *anno Domini*, whether relative to the time-scale of Bede or of Gerlandus, in other words: whether one takes the year 1 or the year 8 for the birth of Christ and thereby the starting point of the Christian era. This applies, for example, to Sturla's numerous datings of this type in *Íslendingasaga*.

It is certainly interesting to try to find out when the Icelanders dropped Gerlandus again. In that connection we must bear in mind that the linear timescale used in Iceland changes in 1263 from using the series of law-speakers to adopting the regnal years of the Norwegian kings. The historian Sturla Þórðarson was commissioned by Magnús Lagabætir with the task of writing the biography of his father Hákon Hákonsson. For his saga Sturla used the royal chancery, which contained much material from the royal correspondence of the English king during the thirteenth century. Here the New Year was on the 24th/25th of March, the same date as was frequently used in England at the time. And the burial of king Hákon thus is dated according to the New Year on Lady Day, the 24th/25th of March. This date of New Year seems to have been used in the Icelandic annals, which in their present form date from the late thirteenth century.

While Bede, Seemundr, and Ari all used an autumn day to begin the year, a New Year in the spring was equally practical for the North European annual cycle in Nature; neither of these dates split the winter. In the ancient Nordic countries, and probably also among the Anglo-Saxons, the year was first of all divided into summer and winter, and the year was mostly identified with the winter. In the Icelandic law-text Grágás we find *sumarmál* and *fyrsti vetrar dagur* as terms for the procedure of most legal affairs.

During the twentieth century, historical research has to a large extent been focussed on source criticism, and new ways of interpreting the material have been tried. However, the question about methods of dating has been given too little attention. During my lecture at the conference I shall discuss four examples in which chronology leads to a revision of our conception and dating of events:

1. The dating of King Sverrir's death in his saga.
2. The dating in *Heimskringla* of the coronation of Magnús Erlingsson.
3. The year 874 in *Landnámabók* for the first settlement of Iceland.

4. Sæmundr and the *Anglo-Saxon Chronicle*.

Furthermore, the pascal tables of Bede and Sæmundr will be discussed.

By way of summary, ways of indicating time vary a lot in the world’s different cultures. In recent centuries we have developed in the Western world a consciousness of time which is quite extraordinary. The foundation of our chronology was laid by a learned priest in Jarrow monastery in Northumbria. In the rather newly christianized environment of Northern England around 700 A.D., the venerable Bede was a pioneer in consistently using the birth of Christ as the origin for his time scale. Other sources primarily used Eusebius’ dating of the creation of the world. With the English heptarchy it became very convenient to have a common chronology for all the seven kingdoms. Moreover, the numbers serving to indicate the years were not so enormous as in the case of Eusebius (compare with Nestor’s chronicle).

Bede’s chronology was tied up with the Christian religion, but there were considerable divergences as to the correct starting point for the Christian era with its *Anno Domini*, and also for the starting point (New Year) for each unit (year) of the calendar. Gradually, though very slowly, Bede’s chronology has become the prevailing one in the culture of Western civilization. England and Normandy were the first to adopt the *Anno Domini* system, quickly followed by Iceland. The pioneers—not only in Iceland, but for Scandinavia as a whole—were the priests Sæmundr and Ari, both of whom gained the cognomen fróði (the wise). The earliest Icelandic written document preserved is from the last decade of the eleventh century and must be attributed to Sæmundr. It must have been extensively used by Ari fróði, particularly in his earlier *Íslendingabók*. In the extant version of *Íslendingabók* Ari marks the year 1120 A.D., the end of the lunar cycle 1102—1120.

The earliest Icelandic historical writing—the oldest and most extensive tradition in Scandinavia—has its origin in the Anglo-Norman historical tradition. In the following centuries Iceland came to develop a historical science more influenced by annalistics than in any other country in North-Western Europe. Sæmundr’s table of the lunar cycles (AM 732 a VII 4to) is fundamentally an abacus for the reckoning of years. With its roots in the mixed economy of early Viking time, Iceland had—like most peoples in pre-industrial societies—a *pars pro toto* system to meet the demand for keeping track of time. In Northern Europe it was the winter that came to represent the whole year. And when learned men wrote their narratives they had to bridge the gap between annalistics and popular ways of expressing time. Good examples of such annalistically ordered literature without the use of a basic time scale are the saga of the priest Guðmundr Arason and *Sverrissaga*.

The Icelanders were thus the chroniclers of the North. In Norway annals were never written. Denmark imported annals from England and the continent, and wrote a few domestic annals ending in the early fourteenth century. In Sweden the writing of annals began in the middle of the thirteenth century. I feel justified in claiming that the abovementioned abacus of Sæmundr fróði is a unique construct of early Icelandic culture and comparable in its ingenuity with the finest sagas.
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