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The Structure of Atlantic Bibles

Sacred text *par excellence* and supreme attestation of the Divine Word, the Bible enjoyed a wider dissemination than any other text throughout the entire Western Middle Ages. Without doubt, it was the most read—and probably the most transcribed—text of the time, even if we still lack an exhaustive census of Latin Bibles. The transposition of the 'Book'—a message laden with profound meanings—into the 'book', an object bearing less explicit but in any event equally important cultural connotations, did not countenance imprecise or amateurish solutions; rather, it constituted the ultimate expression of professionalism in the creation of a manuscript. This insistence on the utmost quality also represents an aspect of conservatism—in fact, more than any other book the Bible had to conform scrupulously to the ideals of uniformity and harmonious proportions that were customarily aimed at by book manufacturing artisans. Such an objective demanded as little deviation as possible from the precepts established by tradition, as well as a high degree of presentational uniformity.

The tendency towards stability can be seen as part of a dialectical process; indeed, given that in the medieval West the Bible never ceased to play a lively and integral role in the cultural fabric of society, its omnipresence meant that from time to time it had to be adapted to prevailing material, graphic and decorative canons and, above all, to the functional requirements of different historical periods. Thus the way in which the Bible manifested itself more generally represents a faithful reflection of the evolution of the book structure, writing and ornamental elements.

Additionally, the Bible constitutes a sort of 'geometric place', around which one can observe a continual intertwining of the various expressions emanating from the development of Christianity and the Church. Marked by doctrinal disputes, issues relating to spiritual renewal and, not least, the struggle for power, the history of the Bible is replete with profound and conspicuous changes—changes which, although sometimes very apparent, are not always easy to interpret. The physical object acts as a vehicle, and even, on occasion, as an

instrument of such changes. The appearance of a biblical text differing from previous ones with respect to content, sequence and internal articulation, and operating simultaneously as a support for new aims and functions, is almost always inseparable from the appearance of specific *mises en livre*, conceived of in order to maximise the spread of spiritual and cultural innovations.[1]

For all the above reasons, the Bible has always represented a great source of interest to scholars. However, the attention paid to the text and its decorative elements has not been matched by an equally close analysis of the more material-related implications concerning the transmission of the sacred text—in other words, a close analysis of the interaction between the objectives of the commissioning patrons and promoters and the object itself, which substantiated such goals and gave them value. Such interactions are directly reflected in various constituent elements of the book (such as the structuring of volumes and the presentation of the written page), in ways which can vary depending on the particular historical period or context concerned.

Precisely on account of its textual specificity, the Bible is also of huge interest to scholars when viewed from a codicological perspective. With its almost three million constituent characters, it can unquestionably be included among the world's lengthiest texts (even if it is in fact articulated into a series of independent textual units, or books within the book). Its full transcription into one or two volumes therefore represents, in technological terms, a not inconsiderable challenge which has seldom been tackled and, even when it has been, one which has yielded very different results. On the one hand, one thinks of the massive dimensions (505 mm × 340 mm) and extraordinary bulk (1,030 leaves) of the Amiatina Bible (Florence, Biblioteca Medicea Laurenziana, Laur. Amiat. 1), which is the oldest fully transcribed Latin Bible that has come down to us, while on the other, at the opposite end of the scale, one thinks of the extreme miniaturisation which in the 13th and 14th centuries accompanied (even if it was neither the cause nor the sole effect of) the penetration into the scholarly world of the revision of the biblical texts in the University milieu. Indeed, it is also worthwhile to point out the fact that within the same cultural 'universe' different problems and objectives can sometimes lead to diametrically opposed solutions. Thus, in Bibles with commentaries dating from the same period, one can encounter extreme fragmentation of the text, which is reduced to serve merely as a support for a rambling exegesis, and is therefore split up into a remarkable number of separate volumes. This phenomenon is accompanied by the appearance of *mises en page* which are as complex as they are rational, having been devised in order to address problems

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1 Maniaci / Muzerelle / Ornato 1999.

in relation to the synchronisation of the basic text with one or more 'layers' of corresponding annotation.

Viewed from this perspective, the appearance of the Atlantic Bibles, around the middle of the 11ᵗʰ century, should also be seen—as in fact it has been—as something highly innovative, not only in textual and artistic terms but also in material terms, with the new approach being expressed through the radical decision to create volumes of truly massive dimensions in comparison to the already large, albeit more contained, Turonian Bibles of the Carolingian age. This extreme solution cannot be accounted for by the purely mechanical necessity to 'compress' the text into monolithic volumes. It also served, perhaps more than anything else, to highlight the central role played by the Book in the propagation of a religious Reform, whose penetration found in the book one of the most representative and effective tools.

However, the exceptionally large dimensions of Atlantic Bibles is only their most striking structural feature, and perhaps not their most important. When subjected to close codicological examination, several phenomena which are not immediately obvious to the 'common' reader do not evade detection, namely the density of the text; the solutions adopted for the *mise en page*; the relationship between textual units (i.e. individual books or series of scriptural volumes) and the subdivision of copying tasks; and various 'quantitative' aspects of decoration (e.g. the size, frequency and distribution of miniatures and ornamental initials in relation to the text). These factors reveal, when more closely and systematically examined, an evolutionary process which remains more or less consistent through time. The same factors pose, also from a codicological perspective, some of the most central questions raised in the field of Atlantic Bible research. For example, to what extent should the volumes be considered the product, continuing over time, of a single project matrix, and to what extent do they conserve a memory of their original link to the Reform which acted as their propelling force?

Answers—albeit partial—to these questions cannot be arrived at simply by performing an indirect global assessment of the Atlantic Bibles corpus, but instead call for a deep and systematic analysis of many different specimens. If the currently known Atlantic Bibles number around one hundred, those upon which the results presented here are based total around sixty (i.e. almost two thirds of the known corpus), with the main group represented by two major funds held in important Italian libraries, namely the Vatican Library in Rome, and the Medicea Laurenziana in Florence. Despite the absence of some of the most ancient and renowned specimens (the Admont, Genova, Munich, Sion and San Daniele Bibles, almost all of which are present in this catalogue [i.e. *Le Bibbie Atlantiche* 2000]), the available documentary basis is sufficiently large and representative

so as to make it possible to arrive at an initial 'portrait' of Atlantic Bible production. The chronology of the manuscripts examined is conveniently scattered over a long period of time and they originate from the two main geographical production areas—Umbria-Rome and Tuscany—as defined by palaeographic and art historical critical studies. In addition to the list published as an endnote to this essay, for the complete shelfmarks the reader can refer to the catalogue's descriptions, from which, wherever possible, additional information on the Bibles that were not directly examined was drawn.

Conceived of with public display and common reading in mind, the Atlantic Bibles are striking, above all, for their exceptional size (somewhat reduced, in many cases, due to fairly drastic trimming). Volumes which measure any less than 500 mm in height are very scarce (Laur. Conv. Soppr. 307, and Laur. Plut. 15.18), with the bulk of witnesses measuring about 550 mm, and not a few exceeding 600 mm in height (Laur. Conv. Soppr. 630; Laur. Plut. 15.13; Lucca 1; Monac. Clm 13001; Vallic. A 2; Vat. lat. 4220–4221 and 12958; Vat. S. Maria Maggiore 4; and Cividale I–II). Of truly monumental dimensions are the Riccard. 221 and Ambros. B 47 inf. Bibles, whose heights exceed 650 mm. The widths of Atlantic Bibles, likewise impressive, range from between 300 mm to over 400 mm.

If the overall dimensions of these volumes provide an initial impression of their great size, their visual impact is defined in a more precise and complete way by the relationship between their width and height (i.e. 'proportion'), which can be expressed as a decimal number which increases as a page's form moves closer towards being a perfect square (with a proportion of 1). Almost all Atlantic Bibles have proportions ranging from roughly 0.60, in the case of the narrowest witnesses (Ambros. B 47 inf.), to 0.707 (Casanat. 720; Laur. Plut. 15.19; and Vat. Ross. 617), the average value being 0.67 (2/3). The widest volumes (such as Casanat. 723, proportion 0.74) are rare exceptions. The shape is far from square; rather, it is distinctly slender (narrower, indeed, than the average commonly seen in the Latin world). However, it would be a mistake to attribute this slender appearance to a specific aesthetic predilection: on the contrary, the makers of the Bibles simply respect the original proportions of animal skins which, being naturally wide, if folded in-folio (i.e. in half, along the minor axis) produce a shape with narrow proportion. (It is not by chance that the large format Bolognese law codices of the 13th and 14th centuries, also featuring an in-folio fold, exhibit precisely the same characteristic, despite the presence of a 'framework' formed by extensive annotation around the main text).

From a dimensional viewpoint, the appearance of the Atlantic Bibles constitutes an outright novelty in the overall panorama of Holy Scripture codices. In fact, both the celebrated Amiatina Bible and the Tours Bible—justifiably cited as

the inspirational model for the Atlantic Bibles—are of decidedly smaller dimensions;[2] the St Gall Bible, Stiftsbibliothek, 75, 545 mm × 401 mm, is the only exception. However, it cannot unequivocally be stated that the massive dimensions of the Atlantic Bibles constitute a singularity, since large format volumes (not solely in Latin script) manufactured in the course of the Middle Ages can also be seen, albeit seldom. Such volumes were destined to be used for the celebration of the liturgy at the church altar or for common reading, and include lectionaries, homiliaries, hagiographical collections, and lengthy patristic texts (such as the *Moralia in Iob* of Gregory the Great, and the *Enarrationes in Psalmos* of Augustine).[3] All the same, such dimensions should be seen as extreme limits, if one excludes the exceptional case of a particular type of codex whose height can exceed 750 mm: such volumes were only produced in the Late Middle Ages (starting in the 15th century), and were the result of a standardised and sustained production (continuing up until at least the end of the 17th century) of large choir books, graduals and antiphonaries endowed with musical notation—intended for display rather than for reading from—in which the creation of each sheet required the sacrifice of an entire beast, hence each bifolium is the product of the splicing together of two whole animal skins.

By contrast, in the case of Atlantic Bibles, as already mentioned above, each skin, folded in two perpendicularly to the dorsal axis, was used to create a single bifolium. This approach resulted in the sacrifice of at least 165 animals for the manufacture of one complete Bible (Parma 386), with the total sometimes rising to a maximum of 260 slaughtered beasts (Laur. Edili 125–126). The method used to fold the skins is readily discernible thanks to the position of the spinal line (which subdivides the bifolium in two, in parallel with the skin's width), and by the position on sheets of the *axillae* (i.e. the four semi-circular areas of the skin coinciding with the leg joints), which have a translucent quality and a more porous grain. In the case of in-folio assemblages, these areas are located in the middle of the upper and lower margins of each page.

Whilst a somewhat vigorous processing of skins reduced the visibility of the spinal line, the *axillae* remain fairly evident, hence the way in which skins were folded can be determined with a high degree of confidence. It can be deduced that the parchments (or perhaps better to say, the 'usable surface' of sheets that remained after the elimination, always thorough in the case of Atlantic Bibles, of irregular edges) measured, on average, around 550–600 mm × 700–800 mm, and can therefore be included among the largest skins employed in the history of

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2 Ganz 1994, 61–62.

3 Bischoff / Maniaci 1995, 314–315.

medieval book production.[4] The skins, if not all, were for the most part derived from sheep and goats (although the occasional use of calfskin cannot be excluded), as can be deduced from an overall assessment of the physical characteristics of the support (to include colour, consistency, surface texture and flexibility), which should be verified using high precision scientific instrumentation. In the making of the Bibles there seems to have been a clear preference for sheepskins of a yellowish hue which are smooth on both sides and highly flexible (in almost 50% of the identifiable cases), rather than goatskins, which tend to be somewhat grey and a bit stiffer, and have a slightly velvety texture on the hair side of the skin (20%). Not by chance, the manuscripts created using skins adjudged to be of ovine origin are slightly larger in size.

The in-folio folding method was widely employed, but not exclusively so. Indeed, a brief, unsystematic preliminary analysis has revealed examples where the aforementioned *axillae* are not located along the upper and lower margins of a bifolium, but instead in the middle of the two outer margins of each of its two halves, as is typical of an in-quarto folding arrangement. This made it possible to obtain two bifolios from each skin (Angel. 1273, ff. 100–104 and 113–118; Casin. 515, pp. 393; 394–401; 402; Laur. Mugell. 1, ff. 224–225; Parma 386, ff. 194–199 and 256–257; Riccard. 221, ff. 79–82 and 106–111; Sessor. 2, ff. 164–167 and 322–327; Vat. Pal. lat. 5, ff. 1–7; Vat. lat. 10511, ff. 255–260; and Mantova 131, ff. 57–64 and 58–63, perhaps obtained from the same skin, which represent the only cases of an in-quarto bifolium positioned on the outside of a quire). It can therefore be deduced that the Atlantic Bible craftsmen occasionally made use of exceptionally large skins (up to 800 mm × 1200 mm in the case of Angel. 1273), and also that within this largely 'standardised' and highly developed book production artisans did not hesitate to mix them with more average ones, even if only sporadically, in common with a practice employed in the Greek context, which has recently come to light.[5]

Even if Atlantic Bibles are extraordinarily large tomes, the full text of the Holy Scriptures is of such great length that a large quantity of leaves is required in order to produce a full transcription. The fully intact Bibles examined during the course of this study are composed of a minimum of 329 leaves (equating to 658 pages, in the case of Parma 386), and a maximum of 518 (more than 1,000 pages, in the case of Laur. Edili 125–126), with the average number of leaves numbering roughly 400 (somewhat fewer than those seen in 13th-century 'pocket Bibles', whose pages are eight times smaller but which, in contrast to Atlantic Bibles,

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4 Maniaci 1999.
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reach and not infrequently exceed some 600 leaves). When the Bible was not sub-divided into two volumes (which the massive Laur. Edili 125–126 was), the text block became exceptionally thick, and therefore the handling challenge it posed became even greater. Maximum bulk is reached in some of the most ancient examples, such as the very thick Casin. 515, consisting of some 458 pages. Later on we shall see how the problem was already very apparent to the artisans who created the first Atlantic Bibles, which were designed to be bound as one volume (as revealed by the quire numbering in the Cividale Bible), but structured in such a way so as to allow its division into two volumes (or more rarely three, such as Vat. Pal. lat. 3–4–5, of even four, as in the case of the Bible of Calci, and originally, in all likelihood, the Volterra Bible), without compromising the integrity of the sacred text. Subdivision of the text into two volumes—often preferred in the original arrangements—has been maintained in some cases up to the present day (Admont C–D, Barb. lat. 589–590, and Vat. lat. 4220–4221), or alternatively abandoned in favour of binding the entire text block into one volume (Vat. lat. 4217, 10404, 12958, with traces of an earlier division into two volumes; this was perhaps also the case with Genève 1; Vallic. A 2; Vat. Barb. lat. 587; and Vat. lat. 10511). The numerous Bibles of which sadly only one volume has come down to us—either the first part (Genesis to the Minor Prophets), or the second (up to the New Testament)—were in all likelihood originally envisaged as two volumes.

Regardless of the fact that the Bible was bound as one or two volumes, it was impossible to escape the need to limit the thickness (and by extension, the weight) of the quire block. In theory, the most obvious solution lies in using the thinnest possible parchment. However, the problem would have seemed more complex to a medieval artisan, given that he had to address various conflicting needs: the use of thinner parchment would make it necessary to employ skins flayed from younger animals (which would be too small for an Atlantic Bible), or require a more vigorous processing (with a consequent greater expenditure of time and effort) of skins sourced from mature beasts. Additionally, the use of excessively thin parchment would have resulted in leaves that were too limp, but more than anything would have jeopardised the integrity of pages and the compactness of quires, which at the time normally did not contain more than eight leaves.

It is probably for this reason that the average thickness of leaves found in Atlantic Bibles measures approximately 210 microns (thousandths of a millimetre), more than double that of a today's standard A4 sheet. This figure is not all that different from the figures recorded for codices of the same period originating

from both Italy[6] and Germany (twelve Evangelaries of the 11th–12th centuries).[7] However, the average value obscures quite significant variations between one Bible and another (even if such variations can be accentuated by the fact that the thickness measurement involved only one quire in each volume). Indeed, codices that are distinctly thick (up to 240–250 microns: Ambros. B 47 inf.; Angel. 1273 and 1274; Casanat. 723; Firenze, B. N. Magl. Cl.XL.1; Lucca 2; Riccard. 221; Vallic. A 2; and Vat. Barb. lat. 589–590), contrast with distinctly thin ones (160–170 microns: Angel. 1272, I and II; Firenze, B. N. II.I.510; Laur. Conv. Soppr. 295; Laur. Edili 125–126; Laur. Plut. 15.1 and 15.12; and Vat. Barb. lat. 587).

The decision to use either a thicker or thinner support—but never a *very* thin one—does not seem to have been contingent on other factors, such as the size of the codex or the number of pages contained in a volume. However, the apparently fickle nature of the variations observed does not necessarily mean that the artisans who created the Atlantic Bibles were entirely indifferent to the thickness of the parchment they used. A systematic gauging of all the leaves in a single quire (with six measuring points located along the borders of each bifolium) revealed that the craftsmen were in the habit of protecting the outside of a quire with a bifolium that was thicker (on average 226 microns) than successive bifolia (with thicknesses of 202, 213 and 205 microns). This technique has already been revealed in various other types of manuscript dating from different periods.[8]

The exceptional care taken by artisans in the manufacture of giant Bibles also becomes clear through an examination of the overall flatness of the skins employed, which is to say their more or less consistent thickness, depending on the amount of time and effort expended on smoothing out any unevenness. In fact, it has been noted that points located close to the spinal line of the animal (where skins tend to be thicker) do not differ all that much in thickness from other points, a good indication that particular attention was paid to producing skins of uniform thickness.

With respect to the structuring of quires, the technique employed for the assembly of Atlantic Bibles did not differ at all from that used in coeval Latin codex production. Quires were composed of regular quaternions, starting with the parchment's hair side (except in the case of the late manuscript Lucca 1), in conformity with the so-called Gregory's Rule. Exceptions to the dominant quiring structure, which can seem quite numerous (around 20% of the total number of quires in the Bibles that were directly examined), are mostly related—as we shall

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6 Bianchi et al. 1993, 390.

7 Examined by Bischoff 1991, 103.

8 Bischoff 1991, 129; Bianchi et al. 1993, 144.

see later on—to the interaction between the codicological structure and textual articulation of the Bibles.

In the case of pricking, too, it would seem that the most widespread system was used. This consisted in making the pricks on already folded and assembled quires, working from the outside towards the inside of each quire. However, it is possible that a closer analysis of the pricking method employed may reveal additional, as yet unidentified, techniques. In particular, in the Bibles that were examined, it was sometimes noted that the alignment of pricks, which is normally distinguished by more or less severe irregularities, is repeated in sequences of two or more quires (Casanat. 720; Casin. 515; Firenze, B. N. II.I.510; Laur. Plut. 15.13; Laur. Edili 125–126; Mantova 131; Vallic. A 2; Vat. lat. 4217 and 10404). One might ask, then, whether it would have been technically possible to pierce so many leaves (one placed on top of another) simultaneously, or if other possible working methods should be hypothesised (for example, pricking carried out on one quire and then 'transferred' to the next, using it as a 'template' in order to repeat the pattern established by the 'pilot' leaf; or, alternatively, the use of a pre-pierced guide made from a strip of parchment or some other material). As regards the ruling systems employed, these reflect, in the range of choices encountered, the difficulty of tracing the horizontal ruling on to very large writing surfaces. In conformity with the systems used in the period, all the Bibles were blind ruled, using a fairly sharp instrument that scored a furrow on the surface of the parchment, thereby creating a raised ridge on the *verso* of the sheet. As is well known, what is generally referred to as 'new style'—where ruling was directly traced on to the hair side of each component bifolium of a quire—was the most widespread system used in Latin codices dating from the 11th and 12th centuries. It is not surprising, then, to discover that such a system was also widely adopted in the production of Atlantic Bibles (approximately two thirds of the codices examined), although it was not the sole system employed. Also observed is a system that involved scoring one page in every two (1r, 3r, 5r, 7r), with the verticals often worked over again on all the hair sides of leaves. According to the most plausible reconstruction of this system, scoring of individual folded bifolia would have produced such a result (Casin. 515; Firenze, B. N. Magl. Cl.XL.1; Genève 1; Laur. Fesul. 4; Laur. Mugell. 1; Laur. Plut. 15.1, 15.10 and 25.1; Mantova 131; Par. lat. 104; Parma 386; Riccard. 221; Sessor. 1; Vat. Barb. lat. 588; Vat. Pal. lat. 3–4–5; and lat. 4217A and 10511).

Concerning the 'rationalisation' of work (meaning here a reduction of labour intensity), upon first consideration the two systems might seem equivalent (in both cases it was necessary to trace the ruling four times for each quire). In reality, the system that involved working on individual leaves was less arduous, since

it essentially halved the area that had to be ruled, which also, importantly, simplified the process of tracing writing lines on large format pages. It is yet to be understood how, in practical terms, it was possible to rule pages when the only reference points available to the artisan were the external pricks, given that none of the volumes show evidence of pricking in the fold margin. One possible explanation could be that a set square was employed, or, alternatively, a ruler that the artisan could slide along an axis vertically aligned with the internal justification. Only a systematic survey would make it possible to verify the simultaneous presence of multiple ruling systems used in the production of a single Bible (occasionally observed in more than one *exemplar*), or the incidence of systems different from those described above (in Laur. Plut. 15.1, for example, where the ruling was executed on the hair side of the parchment on pairs of bifolia, with the scoring clearly visible on 1r/8v and 4v/5r).

Ruling forms a grid of horizontal and vertical lines on each page, known as a 'ruling type'. The *mise en page* of Atlantic Bibles, devoid of systematic commentary, did not call for a particularly complex type. To ensure the orderliness and regularity of a page's layout, vertical delimitation of columns was sufficient (though this was generally bolstered by a second proximate vertical line so as to create double bounding lines for the positioning of initials), together with writing lines for the script (starting, as usual, above the first horizontal grid line). Sometimes a horizontal guide line that bisects the header margin for the alignment of running titles can also be seen.

None of the Bibles presents other marginal lines, and all the volumes examined conform closely to the basic ruling pattern, differing only in the presence or absence of double bounding lines and guide lines for running titles (visible in 60% of the Bibles examined). Differences can also be seen in the extension of the writing lines. In fact, in two thirds of the inspected volumes, these are contained within the borders of the writing area (and therefore traverse the inter-column space), whilst in the remaining third they run from the inner margin (gutter) all the way across to the outer justification. In exceptional cases (i.e. in only two of the volumes examined, Laur. Conv. Soppr. 307 and Vat. lat. 4216), the writing lines are ruled within the two columns, without crossing the intercolumnium. As regards delimitation of the said columns, the two main typologies used four simple lines or four narrow double bounding lines that defined (to the right and to the left) both text columns. Less frequently seen is the presence of a single pair of double binding lines positioned at the inner and outer sides of the writing area (Casanat. 722 and 723; Laur. Edili 124; Laur. Plut. 25.2; Lucca 2; and Sessor. 3), enhanced in only two Bibles (Laur. Plut. 15.18 and Sessor. 2) by a single vertical line that sub-divides the inter-column space. The distribution of these different

types is not a product of pure chance, but instead follows a logical pattern, which will be further explored later on.

All the Atlantic Bibles present with two-column layouts. However, this is not a specific characteristic of this particular type of text, nor does it represent the application of a prevalent aesthetic principle, but rather—as will become clearer later on—a functional characteristic, imposed by the volumes' dimensions and the parameters dictated by the *mise en page*.

The writing area is rather narrow, despite the necessary presence of an inter-column space. Its proportion (on average 0.60, or 3/5) is inferior to that of the full page. This aspect of Atlantic Bibles is also in line with coeval manuscript production. In fact, this characteristic is typical of Western manuscripts and endured up until the advent of modern typography, probably on account of a desire to leave plenty of space in the lateral margins, the natural place to position any subsequent annotation.

With respect to the 'relative' surface area of the margins (considered, that is, independently from the page size), this, needless to say, varies from one codex to another (and often, as we shall see, according to systematic criteria), but in any event presents a certain number of constants which correspond to the dominant choices made during the production of manuscripts of the period. Above all, the relationship between the written surface area and the total surface area of the page (the 'black' or 'page filling') usually does not exceed 50%. This value only seemingly implies an unusual waste of space; in fact, it more or less tallies with the values seen in Western manuscript production before the Late Middle Ages. Indeed, is rather high when considered in relation to the very high production quality seen in Atlantic Bibles.

As is consistently observed in ancient manuscript production, and not solely in the West, from the Early Middle Ages onwards the surface areas of the four margins were not made equal and were instead conformed to a fixed hierarchical criterion which was destined to last almost up until the present day: the two outer and lower margins are always more spacious than the inner and upper ones. Once again, it is likely that a choice seemingly dictated by purely aesthetic criteria was in fact rooted in a practical need (i.e. the desire to position the writing space as far away as possible from the irregular periphery of the skin).

In any event, investigations carried out on large groups of codices have revealed the existence of systematic variations within the basic hierarchical model that governed margin ratios. The variations are confirmed by the prescriptions found in the two best known surviving documents containing so-called 'recipes'. The most ancient source—the Saint-Remi 'recipe', preserved in Par. lat. 11884—establishes, in particular, parity between the outer and lower margins. The later

source—dating from the Humanist era, and attested to by the Munich codex Clm 7775, stipulates parity between the opposite pairing, namely the inner and upper margins. The progressive substitution of the earlier canon with the later one, a widespread phenomenon which has already been brought to light in a work dealing with Latin manuscript production,[9] also affected the Atlantic Bibles. It is perhaps not by chance, then, that the Bibles which conform more closely to the Paris 'recipe' can be placed amongst the most ancient (Genève 1; Parma 386; Vat. Barb. lat. 587; Vat. Pal. lat. 3–4–5; and Vat. lat. 10405), and that other Bibles of later production (Vat. Barb. lat. 589–590; Vat. lat. 10404) conform more closely to the Munich prescriptions. However, this can only be regarded as a rough observation, given the frequently drastic trimming the Bibles have been subjected to in the past. Additionally, there exists the possibility that other canons, different from the ones that have come down to us, were employed. In the absence of explicit documentation, such formulae cannot easily be reconstructed.

Even if, as has already been observed, the written surface of Atlantic Bibles does not exceed 50% of the total page area, the writing area contains a large quantity of text. In fact, the manuscripts consistently present an elevated number of lines, varying from a minimum of 45 (Sessor. 2), to a maximum of 69 (Angel. 1273), with an average line count of around 55 (with the exception of Laur. Conv. Soppr. 295, which has only 39). Consequently, the ruling unit, calculated by dividing the height of the writing area by the number of lines (minus one), is also very 'compressed': in fact, it ranges from 6.5 mm to 9.5 mm, the average value being 7.8 mm. These values are entirely analogous with those recorded in Turonian Bibles which, however, as has already been mentioned, are somewhat smaller in size.

The Psalter and Four Gospels represent a case apart. A well-established tradition often required the transcription of such texts on to a greater number of lines, generally between 60 and 70 (see, among the most ancient examples, Casin. 515; Vat. Barb. lat. 587; Vat. Pal. lat. 3–4–5 and Vat. lat. 10511, and also the later Laur. Edili 125–126). The number of written lines occasionally reached, or even exceeded, 80 (Angel. 1273; Parma 386; and Vallic. A 2). In a few cases—Vat. Barb. lat. 587, and Vat. lat. 10510 and 4218—the Psalter is even laid out in three columns (in 65 lines per column in the first two volumes, and 53 lines per column in the third).

The codices' large dimensions and elevated number of written lines justified the universal adoption of a two-column layout, a solution dictated by the need to contain the length of lines and to assist the eye's transit from the beginning to the

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end of each line.[10] The two columns of text are generally of uniform size, ranging from 98 mm to 134 mm in width (with an average measurement of 115 mm), although in some cases a consistent variation in the widths of paired columns can be observed. Each line of the biblical text (with the exception of the *capitula*, which generally adopt a smaller module) contains an average of around 36 characters; however, the figure can vary considerably, with a minimum of 24 (Laur. Plut. 15. 12), and a maximum of 44 (Riccard. 221). An 'average' page provides space for almost 4,000 characters, though in effect the number is greater if one takes into account the fact that included in the writing are a certain number of commonly used abbreviations (on average ranging from 2–10%).

All the elements discussed up to this point serve to place the Atlantic Bibles in a contextual setting of coeval craftsmanship. Their distinguishing features have been highlighted, but on the other hand adherence to a set of shared 'technical conventions' inspired by the period's prevailing traditions (and in accordance with clear functional requirements) has also been described. If one abandons this 'monolithic' perspective—inspired by the Bibles' exceptional dimensions—one can pose the question as to whether, within a set of volumes of seemingly consistent structures, significant differences can in fact be identified, and, above all, if any differences can be placed in relationship with the chronogeographic phases proposed in previous studies (in particular, those of Edward B. Garrison, Knut Berg and Larry Ayres, on the decoration of the Bibles).

Archaeological investigation alone is not a sufficient means to arrive at new and more precise dating and/or geographical pinpointing of individual witnesses, nor to clarify (still numerous) uncertainties vis-à-vis their attribution. Instead, the more modest aim is primarily to verify whether or not, and to what extent, the structural characteristics of Atlantic Bibles broadly tally with the dichotomy that essentially rests on the findings of an art historical investigation that opposes a compact 'Umbro-Roman' area (centred on the city of Rome) with a less well-defined and far more spread out constellation of Tuscan centres—and, at a more detailed level, with the chronological stratifications identified within each of these two typologies. Secondly, by focusing attention on the 'prototypical' phase of the phenomenon, the aim is also to exploit the contribution made by codicological analysis so as to verify the hypothesis which holds that the majority of ancient Bibles either originated from a single centre, or alternatively from a cluster of nearby production centres unified by shared and strictly codified manufacturing directives.

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10 Bozzolo et al. 1984.

Limiting, for now, the discussion to the unanimously pinpointing Bibles, an immediately evident datum is the fact that the unquestionably 'Umbro-Roman' codices are somewhat larger than the Tuscan ones (with a significant difference of an additional 2.5 cm in height and 1 cm in width). The difference in the volumes' total dimensions is also reflected in the size of the writing area, with the result that the text of the 'Umbro-Roman' Bible is contained in a smaller number of pages. If one takes the Octateuch as an example—a series that is well represented among the manuscripts examined—it can be observed that the first eight biblical books occupy an average of 173 pages in the 'Umbro-Roman' Bibles, and an average of 213 pages in the Tuscan volumes. This difference cannot be attributed solely to the variance in page dimensions and writing areas (which overall is quite moderate), but instead has to do with the different use of space. This can readily be seen by examining the way in which pages were filled (the written surface occupies 48% of a page's surface in the 'Umbro-Roman' specimens, as opposed to 44% in the Tuscan Bibles), and by contrasting the number of lines in a column (an average of 59 and 50, respectively), and consequently the interlinear space (or ruling unit) (7.2 mm, as opposed to 8.2 mm). The tendency to 'lighten' the page is also made apparent by the fact that in the Tuscan Bibles the script module remains almost constant (with round letters measuring 32 mm in height), notwithstanding an increase in the space between lines. The greater space required for the transcription of the Tuscan Bibles explains their structuring into two volumes, a specification that was regularly foreseen in the planning phase of production (as is expressly stated in the colophon of the Fonte Avellana Bible, Vat. lat. 4216). For this reason, very few complete Bibles survive (Laur. Plut. 15.1; and Laur. Edili 125–126).

The differences in size observed between the two groups is complemented by to variations in the characteristics of the support that was employed: the animal species used and thickness of the parchment in particular. Irrespective of the not insignificant number of doubtful cases (at least a third of the total number of volumes), the 'Umbro-Roman' Bibles seem to have been made from parchment derived predominantly from sheepskin (of a yellow hue and flexible consistency), whilst those manufactured in the Tuscan zone make extensive use of goatskin parchment. In addition, the parchment sheets found in the 'Tuscan' Bibles are on average thicker (214 as opposed to 202 microns), and this despite the fact that sheepskin generally possesses the quality of being somewhat thinner.

Another difference in approach can be seen in the dimensional characteristics of ornamental initials, which represent the most significant decorative element in the Bibles. Whilst the majority of the 'Umbro-Roman' volumes bear large letters regularly placed at the beginning of each book of the Holy Scriptures

(adding up to a total of around 70 initials in complete Bibles), in those which are of unequivocally Tuscan origin the average size of initials is smaller, but their number greater, with additional ornamental letters positioned at the beginning of prologues or forming internal partitions within individual books of the Bible.

Needless to say, comparisons drawn between the two groups have a statistical value, but the possibility should not be excluded that individual copies may not reflect the overall trends seen across the board. In other words, the fact that average values might be higher in one of the two sub-groups does not necessarily mean that the same remains true of the entire block of codices to which they belong. Thus, for example, the Tuscan Bibles Angel. 1272 and Laur. Plut. 15.1 present, respectively, 58 and 59 written lines (with the interlinear spaces measuring 6.9 mm and 7.7 mm, respectively), whilst in the Bibles of Santa Cecilia (Vat. Barb. lat. 587) and Montecassino (Casin. 515) the number of written lines is 55–56, both volumes representing early examples of the typology and originating without doubt from the 'Umbro-Roman' zone.

Additionally, among the 'Umbro-Roman' Bibles, the cluster of volumes concordantly ascribed to the 'prototypical' phase of Atlantic Bible history stands out for its overall consistency. The said volumes can be dated to the decades immediately following the middle of the 11th century, and today are generally believed to originate from Rome. All the examples examined (Admont C–D; Angel. 1273; Ambros. B 47 inf.; Casin. 515; Genova; Genève 1; Monac. Clm 13001; Parma 386; Sessor. 1; Vallic. A 2; Vat. Barb. lat. 587; Vat. Pal. lat. 3–4–5; Vat. lat. 10405 and 10511) appear to have been used more intensively, not only in comparison to the volumes of Tuscan origin, but also with respect to the later 'Umbro-Roman' ones, as is made evident by the average number of lines (60 and above) and the ruling unit (measuring approximately 7 mm, as opposed to 8.3 mm in the Tuscan Bibles, and 7.5 mm in the 'Umbro-Tuscan' volumes produced after the first appearance of the phenomenon).

Two other codicological characteristics relate to the material preparation of leaves and the typology of the *mise en page*. Broadly speaking, these features can help us to distinguish between manuscripts made before the beginning of the 12th century and those of later manufacture, and seem to be linked to the Bibles' chronological rank rather than to where they were produced. Typical of the older Bibles is the previously described ruling system applied to single folded bifolia, which initially definitely prevailed over the so-called 'new style' system. This system is associated, in an almost systematic way, with the type of ruling that involved the presence of double bounding lines at both sides of each column. Among the volumes that were examined, the following were found to present both characteristics: Casin. 515; Genève 1; Laur. Fesul. 4; Laur. Mugell. 1; Laur.

Plut. 15.10 and 25.1; Mantova 131; Riccard. 221; Sessor. 1; Vat. Barb. lat. 588; Vat. Pal. lat. 3-4–5; Vat. lat. 10511; Parma 386, in addition to Firenze, B.N. Magl. Cl.XL.1 and Vat. lat. 4217, both of later manufacture.

A fundamental aspect of any manuscript volume's structure concerns the relationship between its textual content and quire sequence. Before examining the Bibles' quire structure, it is necessary to determine (and summarise) the text sequences they contain. The 'canonical' order of the 'Italian' Bibles stipulated the following succession of texts, as defined by Henri Quentin:[11] the Octateuch, Kings, the Book of Prophets, Psalms, the Books of Wisdom, Paralipomenon, Job, Tobias, Judith, Esther, Esdras, Maccabees, and the New Testament. Later on, the so-called 'University Bible' adopted a different sequence: the Octateuch, Kings, Paralipomenon, Esdras 1–4, Tobias, Judith, Esther, the Books of Wisdom, the Book of Prophets, Maccabees, and the New Testament.

In effect, most of the Atlantic Bibles contain a sequence of texts similar to that defined by Quentin, notwithstanding the existence of a number of variants which show, in particular, differences in the two sequences of the books of Tobias, Judith and Esther, and of Jeremiah, the Lamentations, and Baruch (the last mentioned often being absent from the most ancient Bibles, which is also true of the Carolingian Tours Bibles). The fact that some of the Bibles present a different sequence which corresponds more closely to the one seen in 'modern' Bibles does not necessarily mean—as will become apparent—that the said sequence corresponds to the original one, given that many of the inconsistencies are attributable to binding errors, or alternatively to a desire to restructure the biblical texts in compliance with the new order that became established in the 13th century.

The possibility of modifying the original sequence of books, but at the same time safeguarding the integrity of quires and not overwriting portions of the text, was made achievable thanks to the Bibles' specific structure, which probably represents their most characteristic feature.

Two particular features of the quire structure are shared by almost all the Bibles (independent of their age or place of origin), with only a few very rare exceptions. The first is the systematic presence of a caesura—or 'junction' (Italian 'snodo')—between the Old and New Testaments. Here, the term 'junction' is intended to mean the concomitance between the end of a work and the end of a quire which is not a product of pure chance. Such 'junctions' are all the more apparent in quires that are not quaternions, but rather groupings of bifolia which are of irregular structure or consistency (perhaps a quaternion that has been mutilated, or one which has had one or more leaves added to it, or even an altogether

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11 Quentin 1922.

differently structured quire composed of groups of two, three or five bifolia). Furthermore, the caesura can be accentuated by the fact that the written text terminates before the end of the quire is reached, thereby leaving the final page partially or completely blank. The division between the Old and New Testaments is generally positioned at the beginning of the St Matthew's Gospel, but it is often accompanied by a separate transcription of the Prologues, sometimes associated with the Canon Tables. Among the Atlantic Bibles examined, only a few do not follow this general pattern, but instead present with no caesura between the Old and New Testaments (Casanat. 721 and 723; Laur. Plut. 15. 10 and 25.2; Vat. lat. 4217 and 10405). Whatever the case may be, the 'junction' between the Old and New Testaments never coincides with a physical division of the Bible into two tomes: in fact, in comparison with the Old Testament, the New Testament consists of too few pages for it to be conceived of as a separate volume when considered in the context of a complete Bible.

The second peculiarity is found in another 'junction' which is regularly located at the end of the sequence formed by the Books of the Prophets—that is, to say at the conclusion of the Book of Malachi. In contrast to the previous case, the caesura placed at the end of the Minor Prophets serves a clear 'strategic' function, in that it makes it possible to subdivide into two volumes of virtually the same length the biblical text arranged in the sequence devised for the Atlantic Bibles. It is not by mere chance that almost all the Bibles of which only one half has survived conclude with the end of the Books of the Prophets or commence with the Books of Wisdom.

The subdivision of the Old and New Testaments and the caesura occurring at the end of the Book of Malachi represent the two most immediately apparent features of a 'modular' structural approach which, in a significant number of the Atlantic Bibles, is further deployed in a much more sophisticated way.

The most noteworthy examples—here limited to the fully intact Bibles that underwent examination—are listed in the following table (the 'junctions' are identified by a double line; those which are associated with irregular quires are shaded). As already stated, the anomalous sequence in a few of the Bibles (Genève 1; Vallic. A 2; Vat. Pal. lat. 3–4–5; and lat. 10404) can be ascribed to successive 'shufflings' of the texts, whilst Laur. Edili 125–126 must be assumed to represent the original sequence.

Order of biblical books and distribution of caesurae in a sample of Atlantic Bibles (tab. 1.1)

Vat. Pal. lat. 3–4–5	Genève	Vat. Barb. lat. 587	Parma 386	Vat. lat. 10511	Vat. lat. 10405	Laur. Plut. 15.10	Vallic. A 2	Vat. lat. 4220–4221	Vat. lat. 10404	Vat. lat. 12958	Laur. Edili 125–126
Gn	Gn	Gn	Gn	Gn	Gn	Gn	Gn	Gn	Gn	Gn	Gn
Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex
Lv	Lv	Lv	Lv	Lv	Lv	Lv	Lv	Lv	Lv	Lv	Lv
Nm	Nm	Nm	Nm	Nm	Nm	Nm	Nm	Nm	Nm	Nm	Nm
Dt	Dt	Dt	Dt	Dt	Dt	Dt	Dt	Dt	Dt	Dt	Dt
JHo	JHo	JHo	JHo	JHo	JHo	JHo	JHo	JHo	JHo	JHo	JHo
Jdg	Jdg	Jdg	Jdg	Jdg	Jdg	Jdg	Jdg	Jdg	Jdg	Jdg	Jdg
Rt	Rt	Rt	Rt	Rt	Rt	Rt	Rt	Rt	Rt	Rt	Rt
Ho	1 Sm	1 Sm	1 Sm	1 Sm	1 Sm	1 Sm	1 Sm	1 Sm	1 Sm	1 Sm	1 Sm
Jl	2 Sm	2 Sm	2 Sm	2 Sm	2 Sm	2 Sm	2 Sm	2 Sm	2 Sm	2 Sm	2 Sm
Am	1 Kgs	1 Kgs	1 Kgs	1 Kgs	1 Kgs	1 Kgs	1 Kgs	1 Kgs	1 Kgs	1 Kgs	1 Kgs
Ob	2 Kgs	2 Kgs	2 Kgs	2 Kgs	2 Kgs	2 Kgs	2 Kgs	2 Kgs	2 Kgs	2 Kgs	2 Kgs
Gn	Jb	Is	Is	Is	Is	Is	1 Ch	Pr	Is	Is	1 Ch
Mi	Ps	Jr	Jr	Jr	Jr	Jr	2 Ch	Eccl	Jr	Jr	2 Ch
Na	Pr	Bar	Lm	Lm	Lm	Bar	Exdr	Cant	Bar	Lm	Is
Ha	Ec	Lm	Bar	Bar	Bar	Lm	Ne	Ws	Lm	Bar	Jr
Zep	Cant	Ez	Ez	Ez	Ez	Ez	Pr	Sir	Ez	Ez	Lm
Hag	Ws	Dn	Dn	Dn	Dn	Dn	Ec	1 Ch	Dn	Dn	
Zec	Sir	Ho	Ho	Ho	Ho	Ho	Cant	2 Ch	Ho	Ho	Ez
Ml	1 Ch	Jl	Jl	Jl	Jl	Jl	Ws	Ps	Jl	Jl	Dn
Is	2 Ch	Am	Am	Am	Am	Am	Sir	Is	Am	Am	Ho

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Order of biblical books and distribution of caesurae in a sample of Atlantic Bibles (tab. 1.2)

Manuscripts (left to right):

- Vat. Pal. lat. 3–4–5
- Genève
- Vat. Barb. lat. 587
- Parma 386
- Vat. lat. 10511
- Vat. lat. 10405
- Laur. Plut. 15.10
- Vallic. A 2
- Vat. lat. 10404
- Vat. lat. 4220–4221
- Vat. lat. 12958
- Laur. Edili 125–126

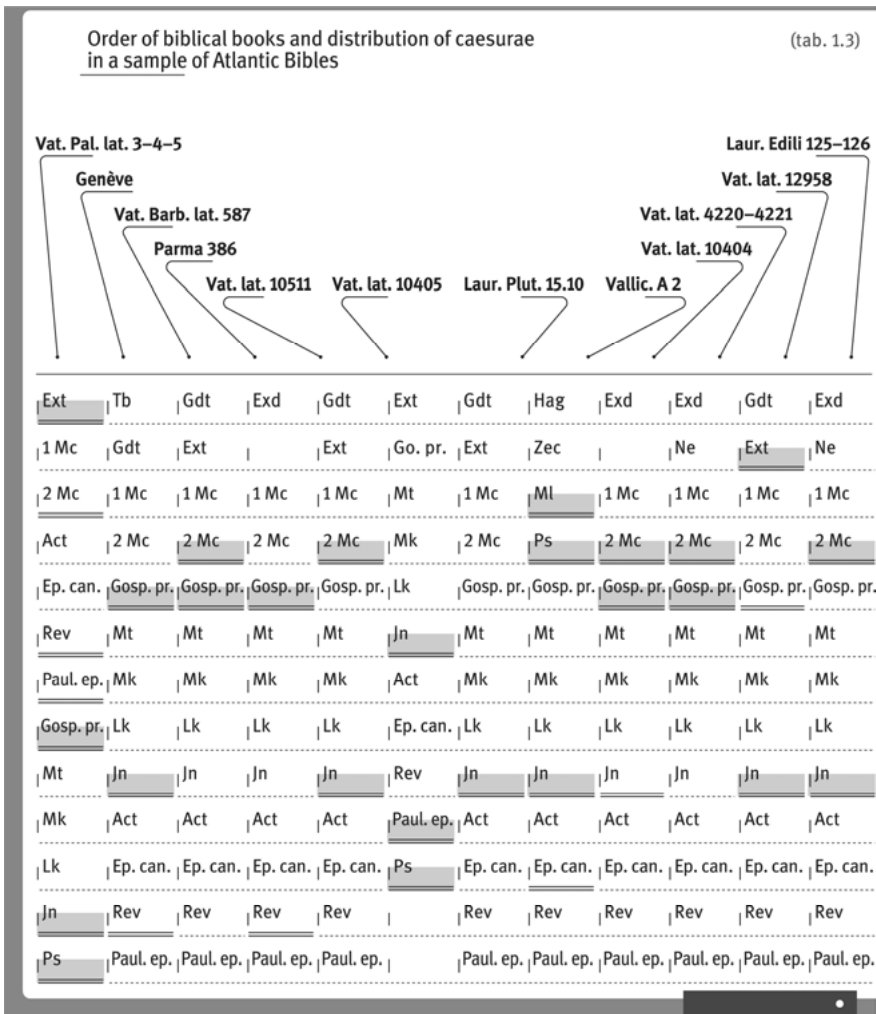| 1	2	3	4	5	6	7	8	9	10	11	12
Jr	Is	Ob	Ob	Ob	Ob	Ob	Jb	Jr	Ob	Ob	Jl
Lm	Jr	Jon	Jon	Jon	Jon	Jon	Tb	Bar	Jon	Jon	Am
Bar	Lm	Mi	Mi	Mi	Mi	Mi	Iud	Lm	Mi	Mi	Ob
Ez		Na	Na	Na	Na	Na	Ext	Ez	Na	Na	Jon
Dn	Ez	Ha	Ha	Ha	Ha	Ha	1 Mac	Dn	Ha	Ha	Mi
1 Sm	Dn	Zep	Zep	Zep	Zep	Zep	2 Mac	Ho	Zep	Zep	Na
2 Sm	Ho	Hag	Hag	Hag	Hag	Hag	Is	Jl	Hag	Hag	Ha
1 Kgs	Jl	Zec	Zec	Zec	Zec	Zec	Jr	Am	Zec	Zec	Zep
2 Kgs	Am	Ml	Ml	Ml	Ml	Ml	Lm	Ob	Ml	Ml	Hag
1 Ch	Ob	Ps	Ps	Jb	Pr	Jb	Bar	Jon	Ps	Ps	Zec
2 Ch	Gn	Pr	Pr	Ps	Ec	Ps	Ez	Mi	Pr	Pr	Ml
Pr	Mi	Ec	Ec	Pr	(Cant)	Pr	Dn	Na	Ec	Ec	Jb
Ec	Na	Cant	Cant	Ec	(Ws)	Ec	Ho	Ha	Cant	Cant	Ps
Cant	Ha	Ws	Ws	Cant	Sir	Cant	Jl	Zep	Ws	Ws	Pr
Ws	Zep	Sir	Sir	Ws	1 Ch	Ws	Am	Hag	Sir	Sir	Ec
Sir	Hag	1 Ch	1 Ch	Sir	2 Ch	Sir	Ob	Zec	1 Ch	1 Ch	Cant
Jb	Zec	2 Ch	2 Ch	1 Ch	Exd	1 Ch	Jon	Ml	2 Ch	2 Ch	Ws
Exd	Ml	Jb	Jb	2 Ch		2 Ch	Mi	Jb	Jb	Exd	Sir
	Exd	Exd	Tob	Exd	Jb	Exd	Na	Tb	Tb		Tb
Tb			Gdt	Ne	Tb	Ne	Ha	Gdt	Gdt	Jb	Gdt
Gdt	Ext	Tb	Ext	Tb	Gdt	Tb	Zep	Ext	Ext	Tb	Ext

Order of biblical books and distribution of caesurae in a sample of Atlantic Bibles (tab. 1.3)

Vat. Pal. lat. 3–4–5	Genève	Vat. Barb. lat. 587	Parma 386	Vat. lat. 10511	Vat. lat. 10405	Laur. Plut. 15.10	Vallic. A 2	Vat. lat. 10404	Vat. lat. 4220–4221	Vat. lat. 12958	Laur. Edili 125–126
Ext	Tb	Gdt	Exd	Gdt	Ext	Gdt	Hag	Exd	Exd	Gdt	Exd
1 Mc	Gdt	Ext		Ext	Go. pr.	Ext	Zec		Ne	Ext	Ne
2 Mc	1 Mc	1 Mc	1 Mc	1 Mc	Mt	1 Mc	Ml	1 Mc	1 Mc	1 Mc	1 Mc
Act	2 Mc	2 Mc	2 Mc	2 Mc	Mk	2 Mc	Ps	2 Mc	2 Mc	2 Mc	2 Mc
Ep. can.	Gosp. pr.	Gosp. pr.	Gosp. pr.	Gosp. pr.	Lk	Gosp. pr.	Gosp. pr.	Gosp. pr.	Gosp. pr.	Gosp. pr.	Gosp. pr.
Rev	Mt	Mt	Mt	Mt	Jn	Mt	Mt	Mt	Mt	Mt	Mt
Paul. ep.	Mk	Mk	Mk	Mk	Act	Mk	Mk	Mk	Mk	Mk	Mk
Gosp. pr.	Lk	Lk	Lk	Lk	Ep. can.	Lk	Lk	Lk	Lk	Lk	Lk
Mt	Jn	Jn	Jn	Jn	Rev	Jn	Jn	Jn	Jn	Jn	Jn
Mk	Act	Act	Act	Act	Paul. ep.	Act	Act	Act	Act	Act	Act
Lk	Ep. can.	Ep. can.	Ep. can.	Ep. can.	Ps	Ep. can.	Ep. can.	Ep. can.	Ep. can.	Ep. can.	Ep. can.
Jn	Rev	Rev	Rev	Rev		Rev	Rev	Rev	Rev	Rev	Rev
Ps	Paul. ep.	Paul. ep.	Paul. ep.	Paul. ep.		Paul. ep.	Paul. ep.	Paul. ep.	Paul. ep.	Paul. ep.	Paul. ep.

Tab. 1: Order of biblical books and distribution of caesurae in a sample of Atlantic Bibles

Each of the Bibles listed in the table contains a number of 'junctions', ranging from a minimum of nine (Genève 1 and Vat. Barb. lat. 587) to a maximum of fifteen (Pal. lat. 3–4–5). The main caesurae, which are common to the majority of volumes, are found at the end of the Octateuch (8 cases in 12), Kings (9 in 12), the Minor Prophets (11 in 12) and/or Paralipomenon (7 in 12), Maccabees (7 in 12), between the Old and New Testaments (in full, with or without introductory texts, 10 in 12), and between the Gospels and the Acts of the Apostles (8 in 10).

This modular arrangement is also found (in similar ways) in many of the (presently) incomplete Bibles (Ambros. B 47 inf.; Mantova 131; and Par. lat. 50 and 104), and is frequently accompanied by various other peculiarities. The Psalms, when present, are often transcribed as independent units (two quaternions in Laur. Plut. 25.1 and Vat. lat. 12958; two ternions in Par. lat. 104 and Vat. lat. 10404 and 10511; one quaternion plus one ternion in Vat. Barb. lat. 587 and 588, Vat. Pal. lat. 5, and Vat. S. Maria Magg. 4; one ternion plus one binion in Vallic. A 2; and finally, one binion coupled with two quaternions, one of which is irregular, in Casanant. 723). The same treatment was often reserved for the Book of Job, which was generally accommodated in an independent quaternion of varying position (Monac. Clm 13001; Vallic. A 2; Vat. Barb. lat. 587; Vat. Pal. lat. 4; and Vat. lat. 12958; and a quinion in Genève 1), and for the introductory material to the Gospels (Mantova 131; Vat. Barb. lat. 587; and Vat. lat. 10404). In both cases, this explains the 'shifting' of the texts. Furthermore, the Psalms usually follow the Book of Job, falling between the Books of the Prophets and the Books of Wisdom, but can also be found inserted between the Old and New Testaments (Laur. Plut. 15.1; Vallic. A 2), before the Book of the Maccabees (Vat. S. Maria Maggiore 4), or at the end of the New Testament (Vat. lat. 10405 and Vat. Pal. lat. 3). As regards the Book of Job, this is most often found positioned after the Minor Prophets, but is sometimes seen in other positions, often following Paralipomenon (for example, in Par. lat. 104; Parma 386; Vat. Barb. lat. 587; Vat. lat. 4217, 4218 and 4221; and Vat. S. Maria Maggiore 4), or following Esdra (Angel. 1274; Vat. lat. 10405 and 12958), and finally, at the end of the Books of Wisdom (Sessor. 3).

Additional caesurae which can be defined as being of secondary importance can be found marking the end of the two books of Paralipomenon and the Book of Esther. Further occasional caesurae—whether they are intentional or not is difficult to say—appear in various other places: for example, at the end of the Pentateuch (Laur. Edili 125–126; Vat. lat. 4217A, 10405 and 12958); within the long sequence formed by the Prophets (Ambros. B 47 inf.; Angel. 1272; Casanat. 722; Casin. 515; Laur. Edili 125–126; Laur. Mugell. 1; Laur. Plut. 15.10; Laur. Fesul. 4; Par. lat. 50; Vat. Pal. lat. 3; Vat. lat. 4217, 4220, 10404, 10405, 10511 and 12958); and following Proverbs (Angel. 1274; Casanat. 721 and 723; Laur. Edili 124 and 126; Laur. Plut. 15.1 and 15.10; Lucca 2; Par. lat. 104; Parma 386; Vat. Barb. lat. 587 and 588; Vat. Pal. lat. 3; Vat. lat. 4127, 4218, 4221, 10405, 10511 and 12958). Finally, the Books of Isaiah (Laur. Edili 125; Laur. Plut. 15.10; Vat. lat. 4217 and 10405) and Ezekiel (Laur. Fesul. 4; Laur. Mugell. 1; Par. lat. 50; Vat. lat. 10404), and the sequence which forms the Minor Prophets (Laur. Edili 125; Par. lat. 50; Vat. Pal. lat. 3), can also coincide with similarly autonomous modules, each composed of two or three quires.

The modular nature of the quires composing the Bibles (as described above) endowed them with a high degree of 'interchangeability', which can only be the product

of conscious choices made at the time of the volumes' assembly. More than anything, the evidence strongly suggests the adoption of a strategy of intentionally convergent choices, in that the caesurae almost always coincide with the end of the same scriptural texts. In addition, the caesurae are not infrequently made evident by two or more 'deviant' quires in sequence, rather than one quire of anomalous structure, the obvious intention being to prepare in advance for the caesura (Laur. Plut. 25.1; Vallic. A 2; Vat. lat. 10404). If this capability resulted in binding errors as a consequence of 'creative' textual sequences, it also made it possible, from the earliest phases in the giant Bibles' history, to reassemble text blocks in accordance with changing needs and historical developments.

In addition, the apparently 'abnormal' succession of biblical books could be accounted for by the existence of an original 'model sequence', as is quite evident in cases where the Books of Wisdom were placed (sometimes with, sometimes without, intervening books) after Kings and before the Books of the Prophets, in conformity with the typical sequence found in the Bible of the 13th century (Angel. 1273; Genève 1; Laur. Edili 124; Laur. Plut. 15.12 and 15.18; Vat. lat. 10404). This does not mean that all the Bibles that contain the same caesurae are completely interchangeable in relation to the textual sequence, inasmuch as variations exist in the succession of the books that compose entire and indivisible text blocks. This is certainly the case in the sequence Esdra-Tobias-Judith-Esther, where Esdra can either precede or follow the other three books, and Tobias-Judith-Esther can be arranged in the sequence Tobias-Judith-Esther, or, less frequently, Esther-Tobias-Judith, in accordance with the Alcuinian trend (Genève 1; Casanat. 721 and 723; Casin. 515; Vat. Barb. lat. 588; Sessor. 1; and Mantova 131).

This last-mentioned peculiarity provides us with indirect evidence which excludes the possibility that the modular structure of the Bibles was solely intended to facilitate the creation of different sequential permutations; indeed, had this been the case, caesurae should have appeared to coincide with the particularly 'unstable' sequence composed of Tobias, Judith and Esther. On the other hand, it is interesting to note that a very frequent caesura—that which separates the Octateuch from Kings—is positioned within a sequence that is particularly stable and which was almost never modified.

It is altogether likely, then, that in reality the phenomenon has more complex roots and was the result of several concomitant factors.

In the first place, the possibility should be considered that the text's assembly into blocks did not serve only as an indispensable means to mitigate an excessive 'rigidity' in the textual flow, but was also a result of the need to divide tasks among multiple scribes (and possibly multiple miniaturists as well) working simultaneously on the production of a single volume. Such a possibility presupposes that the caesurae correspond to a commensurate number of changes in artisans' hands. In order to

verify this hypothesis, in addition to a thorough analysis of the kind carried out by Marco Palma,[12] a precise survey of any irregularities in the density of the writing and the number of abbreviations employed in proximity to the caesurae (the frequently encountered phenomenon of blank columns and pages nudges research in this direction) would have to be carried out.

Should the hypothesis of simultaneous transcription prove to be valid following a suitable palaeographic analysis (hints of 'strategic' changes in artisans' hands can be gleaned, for example, from the descriptions of the Ambros. B 47 inf.; S. Ambrogio M 55; Vat. lat. 4218, 4220–4221, 10510, 10511; Vat. Ross. 617 Bibles, although it should be pointed out that not all the caesurae coincide with the turnover of copyists), it would be necessary to look closely at the functional implications and historical significance of such a copying method. In fact, a method of this kind finds its place in a context in which the transcription of a text of considerable length over a period of a few months represented a routine practice, the aim being to disseminate the new 'product' in as shorter time as possible. However, within the context of such a hypothesis, the incompatibility of the Bibles' modularity with the so-called *pecia* system, which was deployed two centuries later for the dissemination of texts in the main university cities, should immediately be emphasised, not only on account of the obvious difference in the cultural context, but also for material reasons. In fact, it has been noted that in contrast to what can be observed in Atlantic Bibles, copies made using this system, transcribed by only one copyist, do not present any signs of modularity, which was characteristic of the sole *exemplar* held by the university stationer. Furthermore, it is worthwhile to recall that the goal of the *pecia* system was not that of speeding up an individual volume's preparation, but rather the practically simultaneous production of identical copies, thanks to the sequential sharing of a unique model authenticated by the relevant university's authorities. Even if we limit the comparison to the most ancient specimens, the Atlantic Bibles exhibit, on the contrary, in both their structural and their textual characteristics, considerable differences.

To these two principal factors we can add a few more: in the first place, the nature of the textual models adopted for the Atlantic Bibles, which in all likelihood consisted (in the initial phase, at least) of independent groups of biblical books, rather than of complete Bibles contained in one volume. In addition, we must consider the weight of a secular tradition which conceptualised the Bible as a *bibliotheca*, composed of an association of books or groups of distinct and autonomous books (i.e. booklets), sometimes gathered together within the same binding, but also subject—frequently, in fact—to being circulated separately. Indeed, it is not by chance that the most recurrent caesurae coincide with the main textual partitions in the Vulgate. In this

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12 Braga / Orofino / Palma 1999.

connection, it would be necessary to verify the presence of caesurae in the oldest Bibles—Turonian ones, above all—which stand out, it seems (though a more in-depth analysis would be desirable so as to reinforce this impression) on account of a more 'stable' sequencing of the Holy Scriptures. However, the 'tendency to harmonise the internal organisation of the work with the material composition of the codex' is neither a new nor characteristic feature in the manufacture of the Bible, since it can already be observed towards the middle of the 8th century in a volume of Augustin's *De trinitate* (Oxford, Bodleian Library, Laud. misc. 126) originating from Northern France.[13]

This question, for now, has to remain unanswered. However, it is no small thing (even if the reasons lying behind the phenomenon remain unclear) that the modularity of the Bibles is essentially a characteristic found in the most ancient witnesses originating from the 'Umbro-Roman' zone, and that the phenomenon diminished with the passage of time and the shifting of centres of production towards Tuscany, until it entirely disappeared in the first half of the 12th century. Among the Bibles of unquestionably Tuscan origin, only Laur. Edili 125–126 presents a conspicuous number of caesurae, which furthermore only partially coincide with the ones observed in 'Umbro-Roman' volumes. There is a complete absence of caesurae in many Bibles produced after the first quarter of the 12th century (Casanat. 720; Sessor. 2; Laur. Conv. Soppr. 307 and 630; Laur. Plut. 15.12 and 15.19; and Vat. lat. 4216). In at least one case (that of the Ávila Bible, Matrit. Vitr. 15.1), the absence of some of the more 'classical' caesurae contributed significantly to the splitting up of the volume and a consequent duplication of the opening and closing sections of some of the scriptural books when it was deemed necessary to 'modernise' the textual sequence.

In any event, no matter how the influence of various factors is assessed when interpreting the structural evolution which has been brought to light, it seems reasonable to deduce that a shift took place between two distinctly different production approaches: an older, 'intercommunity', multi-participatory approach composed of initiatives emanating from one or more scriptoria, coordinated and organised in accordance with very precise final objectives; and a later 'intercommunity' approach in which the transcription of a single Bible would be the product of an isolated effort made within a specific collective, whose members might also share the financial burden associated with the volume's production (as attested to by a lengthy colophon in the Giant Bible of Calci, and by marginal glosses present in Casanat. 722). In the first instance, the goal was to maximise the dissemination of a ground-breaking form of the Bible that was intended to serve as a vehicle for new political and doctrinal messages and was aimed at a variety of uses and users. This represented an operation that made it necessary not only to draw on multiple textual sources, but also to adopt

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13 Palmer 1989, 54.

ad hoc organisational methods and manufacturing techniques (in addition to calligraphic and decorative work), and was therefore considered 'abnormal' and innovative in comparison to those adopted in the past. In the second instance, the goal was simply to reproduce (faithfully, and in a practical way) an already existing model of the Bible, so as to bestow prestige on a community. This less ambitious goal could be entrusted to accomplished professionals who were not necessarily cloistered within monastic environments. Such artisans tended to employ the most convenient, tried and trusted techniques. Hence, in this second scenario, the manufacturing technique was limited to merely retracing the natural reading sequence, rather than paying attention to the interaction between the structure of the text and that of the book. In other words, the Bible was treated in precisely the same way as other texts, and therefore in a sense somewhat 'trivialised'. It is not by pure chance that, in an analogous and contemporaneous evolutionary process, the copying of Evangeliaries received the same treatment.[14]

It is fairly obvious that the questions posed by the appearance of the Atlantic Bibles in the history of the dissemination of the Holy Scriptures cannot be answered simply by conducting a codicological analysis. Nevertheless, it is also possible that a more in-depth investigation of the surviving volumes could uncover further elements which might usefully contribute to enriching chrono-geographical expertise. In addition, such research could also improve our knowledge of the particular techniques that were employed during the preparation of these remarkable volumes.

The various pieces of evidence gathered so far have contributed to allowing us to isolate a core group of 'ancient' Bibles, the creation of which proves beyond a shadow of a doubt that it represents the result of a carefully planned project. However, it is difficult to establish whether or not individual volumes were the product of a single scriptorium or—as I believe to be the case—of a group of neighbouring production centres operating in a coordinated way. The issue is further complicated when one considers the diachronous dimension: in the development of Atlantic Bibles, the associated chronological and geographical data become indissolubly intertwined, thus it is not always possible to determine whether or not the changes observed are attributable to changes occurring in the production centres and in techniques—and by extension in the history of the biblical texts—or alternatively to changes of a more general kind which, starting in this period, exerted an impact on book artisans, clear evidence of which is provided by the Bibles. Even if, when looked at from the perspective of a relatively circumscribed history of the Bible, this second element is perhaps not the most central, the contribution that Atlantic Bibles could make to the history of the book (between the Early and Late Middle Ages) in a wider perspective should

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14 Bischoff 1991.

not be neglected, inasmuch as the circumstances of their production represented a crucible of artisanal, graphic and 'peri-graphic' innovation aimed at reconciling the contradiction arising from the considerable size of the 'textual mass' and the desire to contain it within a monolithic block.

Hence, in this wider panorama the potential value of a comparative diachronic/synchronic analysis of the Bible's numerous 'materialisations' as a book—and not only in the Latin context—should be emphasised, since such 'materialisations' constitute on the one hand a focus of interest of primary importance for scholars of sacred texts, and on the other, in virtue of the text's fixedness and the need for it to be adapted to unavoidable and frequently conflicting exigencies, an invaluable 'observational laboratory' for today's codicologists.

Irrespective of the specific goals of any research, it is obvious that, in order to bear fruit, any investigation calls for a systematic examination and description of the greatest number possible of surviving specimens, as well as a pooling of various disciplines (namely, history, philology, art history, palaeography and codicology). Seen from this standpoint, then, with respect to Atlantic Bibles, the organisation of the present exhibition[15] and its accompanying catalogue constitute not only an indispensable introduction to the subject but also a significant advance in it. However, it now seems clear that an in-depth analysis of the fresh insights that these achievements represent, not only in terms of the history of the tradition and criticism of the sacred text, but also in relation to the manufacture of the Bible as a book—and, indeed, of the book in general—cannot exclude, for the earlier period, an investigation of Carolingian Bibles, and for the later phase, an in-depth study of the so-called 'University Bibles'. Similarly, research into the reception of the Atlantic model beyond the Alps over the course of the 12th century should not be neglected.

A list of the Bibles examined:

Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. Arch. S. Pietro A 1
Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. Barb. lat. 587
Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. Barb. lat. 588
Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. Barb. lat. 589–590
Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. lat. 10404
Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. lat. 10405
Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. lat. 10510
Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. lat. 10511
Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. lat. 12958
Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. lat. 4216

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15 *Le Bibbie Atlantiche* 2000.

Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. lat. 4217
Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. lat. 4217A
Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. lat. 4218
Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. lat. 4220–4221
Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. Pal. lat. 3–4–5
Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. Ross. 617
Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. S. Maria Maggiore 4
Firenze, Biblioteca Laurenziana, Laur. Conv. Soppr. 295
Firenze, Biblioteca Laurenziana, Laur. Conv. Soppr. 307 (I)
Firenze, Biblioteca Laurenziana, Laur. Conv. Soppr. 630
Firenze, Biblioteca Laurenziana, Laur. Edili 124
Firenze, Biblioteca Laurenziana, Laur. Edili 125–126
Firenze, Biblioteca Laurenziana, Laur. Fesul. 4
Firenze, Biblioteca Laurenziana, Laur. Mugell. 1
Firenze, Biblioteca Laurenziana, Laur. Plut. 15.1
Firenze, Biblioteca Laurenziana, Laur. Plut. 15.10
Firenze, Biblioteca Laurenziana, Laur. Plut. 15.12
Firenze, Biblioteca Laurenziana, Laur. Plut. 15.13 (I)
Firenze, Biblioteca Laurenziana, Laur. Plut. 15.18
Firenze, Biblioteca Laurenziana, Laur. Plut. 15.19
Firenze, Biblioteca Laurenziana, Laur. Plut. 25.1
Firenze, Biblioteca Laurenziana, Laur. Plut. 25.2
Firenze, Biblioteca nazionale, II.I.510
Firenze, Biblioteca nazionale, Magliab. Cl..XL.1
Firenze, Biblioteca Riccardiana, 221
Genève, Bibliothèque publique et universitaire, 1 (= Genève 1)
Lucca, Biblioteca capitolare, 1 (= Lucca 1)
Lucca, Biblioteca capitolare, 2 (= Lucca 2)
Mantova, Biblioteca comunale 131 (= Mantova 131 [A V 1)
Milano, Biblioteca Ambrosiana, Ambros. B 47 inf.
Montecassino, Archivio dell'abbazia, Casin. 515
Paris, Bibliothèque nationale de France, Par. lat. 50
Paris, Bibliothèque nationale de France, Par. lat. 104
Parma, Biblioteca Palatina, 386 (= Parma 386)
Roma, Biblioteca Angelica, Angel. 1272 (I)
Roma, Biblioteca Angelica, Angel. 1272 (II)
Roma, Biblioteca Angelica, Angel. 1273
Roma, Biblioteca Angelica, Angel. 1274
Roma, Biblioteca Casanatense, Casanat. 720
Roma, Biblioteca Casanatense, Casanat. 721
Roma, Biblioteca Casanatense, Casanat. 722
Roma, Biblioteca Casanatense, Casanat. 723
Roma, Biblioteca nazionale, Sessor. 1
Roma, Biblioteca nazionale, Sessor. 2
Roma, Biblioteca nazionale, Sessor. 3
Roma, Biblioteca Universitaria Alessandrina, 1
Roma, Biblioteca Vallicelliana, A 2

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