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Searching for dark ages

Introduction

This article aims to propose a method for a rough quantitative analysis of chronological information about objects of art from the past.

We describe three methods on the basis of which a graph can be constructed to illustrate the chronological distribution of information about art (or CDIA for short) of a given monograph (or a catalogue or encyclopaedia). One of them leads in fact to the volume function introduced by A. Fomenko in 1981.

The graphs of CDIA are compact and clear. They could be included in the annotations of the editions for which they are constructed. So the readers could be easily informed about the chronological classification of the information in the book. Using graphs similar to those of CDIA, scholars of art history requiring information about certain historical periods can skip editions that contain little of that and focus on editions in which 'their' age is well presented by monuments and data on them.

What are 'Dark Ages' and when were they?

It is thought that in the past of the European nations there were periods in which their development came to a halt and the whole of society regressed. The state system was shattered, the social relations became degraded, the production decreased, the commerce nearly froze. The population in the once flourishing cities drastically waned in numbers and wealth, no new buildings were erected and the old majestic ones slowly succumbed. Instead of armies numbering thousands of well-trained, well-armed, disciplined warriors the battlefields saw hordes of unenlightened barbarians who plundered and destroyed valuable monuments. The general deterioration of the quality of life led to a coarsening of the ways and to a decline of the arts.

We know this picture from many classical textbooks and monographs: this is how historical science depicts the period from approximately the middle of the fifth to the ninth century. Some place its beginning after the fall of the Western Roman Empire in the mid-fifth century, others after the reign of Justinian I, in the late sixth century.

Of course there are other shades in this generalised view. Many experts maintain that 'Dark Ages' is too obscure a term, not quite adequate and exaggerated in many respects, and are inclined to search for exceptions at least in regard to particular nations and periods. They probably have their reasons.

Yet the term 'Dark Ages' persists in historical science. Can we find an objective measure, albeit an approximate one, of the state of the arts in bygone ages?

This article aims to propose a method for a rough quantitative analysis of chronological information about objects of art from the past. Apart from the other purposes which will be mentioned at the end of the paper, the method can serve for presenting arguments *pro* and *contra* the existence of 'Dark Ages' and concerning their allocation in time.

The premise is that the concept of 'Dark Ages' is largely connected with the state of the arts. It appears likely that if the quality of life is poor, the productivity of labour is poor, people's main

priority is physical survival, their ways will naturally be coarse, their inherent interest in matters spiritual will get no material expression and thus no significant number of permanent valuable objects of art will be created.
In other words, it is to be expected that fewer bright impressive creations will be inherited from the 'Dark Ages'. Or, if the reader prefers a more precise turn of speech, it can be said that it is *more probable* for fewer such creations to be inherited from 'Dark Ages' than from periods of 'normal' development or from 'Golden Ages'.
All the same it must be emphasised that the picture of the chronological distribution of information concerning objects of art is not something that need be related to the search of 'Dark Ages'; other, more ordinary applications will also be highlighted.
The objects of art inherited from bygone ages are featured in many catalogues, monographs, reference books and encyclopaedias. These editions summarise the effort and knowledge of many scholars and for this reason they can be a good basis for further research; they shall be so used here as well. What is more, for definiteness' sake let us assume that the general task of chronological representation of 'information about art' from the past can be reduced to a similar task regarding the sum total of monographs, reference books, catalogues, encyclopaedias, etc., which deal with the history of art to one degree or the other.
Thus the named purpose (the search of 'Dark Ages'), and perhaps other applications, can be pursued step by step by examining the relevant literature 'book by book'.
So what is a way of finding (or constructing) an appropriate representation of the *chronological distribution of information about art* (or CDIA for short) for a given book?
This statement is analogous to the task of finding the chronological distribution of information in historical texts [1, 4, 6, 2, 3, 8] and calls for analogous ideas for its solving.
Let us describe several models (or methods) on the basis of which a graph can be constructed to illustrate the CDIA of a given monograph (or a catalogue or encyclopaedia).
The first book which shall be used to illustrate the methods proposed here is Strong. It is devoted to British art in the past. The reader can get an idea of it from the annotation on the cover: "Roy Strong ... deals with ... the growth and development of the country's arts: literature, music, poetry, painting, architecture, theatre, and all the related subjects which give British intellectual and creative life its unique character. ... And instead of compartmentalising the arts he treat them as a single unfolding narrative, thus highlighting the driving political, social, economic and philosophic forces behind them. ... And throughout the book Sir Roy emphasises what sets the island of Britain apart as well as what unites it to the mainland of Europe. The book is stimmingly illustrated with pictures chosen by the author to complement and expand the text. They dazzle and enlighten, adding much to the overall impact".
The author himself places special emphasis on his many years of work on accumulating and classifying all the information, an appropriate selection from which he presents: "... I have spent half a century looking, reading and listening to everything connected with the arts in Britain ... I have directed two major national collections, the National Portrait Gallery and the Victoria & Albert Museum ...".
Both the annotation and his own assessment of the monograph highlight the importance of the illustrations, which represent what is most valuable and interesting in the rich museum collections.
This is why in the first model for constructing a CDIA it is precisely the illustrations that will serve as carriers of the information used to construct the desired distribution.
Thus each illustration IL from Strong will be used in the construction of the distribution (or its function, to be more precise); the 'chronological function' corresponding to IL will be defined and constructed and then the CDIA for CDIA for Strong will be obtained by adding up all such functions.
Let us consider the illustration on p. 22 in Strong. The caption says: "Shoulder-clasp from the burial hoard of a Saxon king found at Sutton Hoo, Suffolk, dating from about 625. The clasp is of gold set

with garnets and millefiori glass arranged in the interlacing patterns and chequers which recur in Anglo-Saxon art".
Call this IL-22 and consider the 10-year range (620-630), which:

1. contains the year 625, identified as the approximate time when the object in IL-22 was made, and
2. is bounded by integers ending in zero.

Let us define the function (cf. Fig. 1).

$$\text{IL}-22(t)=\begin{cases}60, \text{ if } t \text{ belongs to the range } (620-630)\\ 0, \text{ if } t \text{ does not belong to the range } (620-630)\end{cases}$$

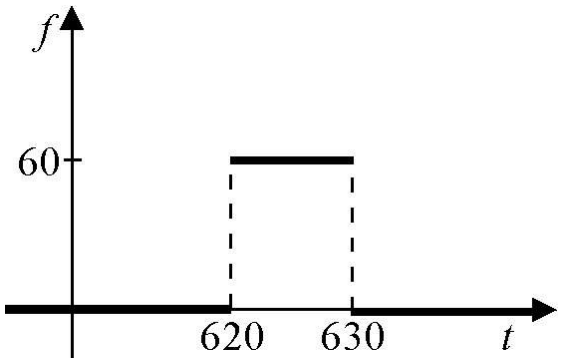

Figure 1. The graph of the function IL-22(*t*).

In the same ways a function will be defined corresponding to each illustration in Strong. Several typical examples slightly different from the first one shall serve as an explanation.
On p. 24 in the monograph under scrutiny there is an illustration with the following caption: "The Gospels of St. Augustine, a sixth-century Italian manuscript. This is virtually certainly one of the books supplied to Augustine by Pope Gregory the Great for his mission in England in 596. It is even today used in the occasion of the enthronement of a new Archbishop in Canterbury."
So the manuscript in the picture goes back to the sixth century. This information points to the range (500-600). It is clear that we are dealing with an uncertain dating. But the goal in principle is to obtain a rough, approximate representation of the CDIA. Since the use of some approximate data doesn't affect the results considerably, it is no obstacle to the attainment of the goals. Therefore let us define the corresponding function IL-24(*t*) as follows (Fig. 2):

$$\text{IL}-24(t)=\begin{cases}6, \text{ if } t \text{ belongs to the range } (500-600)\\ 0, \text{ if } t \text{ does not belong to the range } (500-600)\end{cases}$$

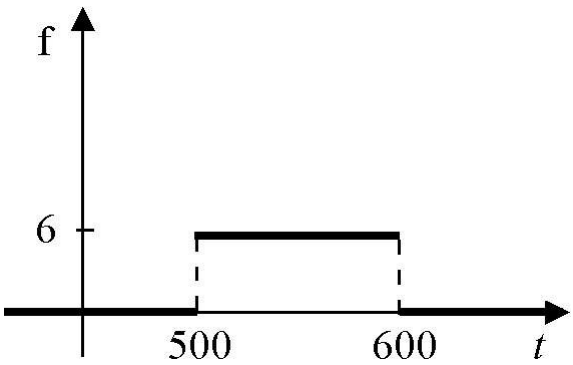

Figure 2. The graph of the function IL-24(t).

This is the right time to draw attention to two important details: (1) for the sake of convenience, a 'quantum of time' equal to 10 years is chosen, so that all time ranges used are bounded by years whose numbers end in zero; (2) the 'height' of the new function IL-24(t) is 6 and thus different from the 'height' of the former function IL-22(t), which was 60. This is done so that each illustration will contribute the same weight towards the forming of the final CDIA in the case of Strong 1999. For this purpose the 'heights' are so chosen that the graphs of the two functions IL-22(t) and IL-24(t) 'enclose' rectangles with equal areas from the first quadrant. Their area can be arbitrary; in this case the number 600 is chosen for convenience.
In conformity with these rules, for another illustration (on p. 105) with the caption: "A Nottingham alabaster of the Resurrection carved between 1400 and 1430. These were the subject of a large export trade to the Continent besides providing devotional pieces for prosperous households."

the function

$$\mathrm{IL}-105(t)=\begin{cases}20, \text{ if } t \text{ belongs to the range } (1400-1430)\\ 0, \text{ if } t \text{ does not belong to the range } (1400-1430)\end{cases}$$

is defined. It also 'cuts out' a rectangle with an area of 600 from the first quadrant.

Given such functions for all illustrations in Strong 1999, a function C(t) can be obtained as the sum of all these functions:

$$\mathrm{C}(t)=\sum \mathrm{IL}-n(t)$$

Here the addition on the right-hand side is done by all numbers n of pages on which illustrations are found. This is how the resulting function C(t) characterises the examined CDIA in the book Strong.
This general method can be applied with some minor modifications. In this particular case of the book Strong the point of interest is the existence of possible 'Dark Ages', so attention is focussed upon the age preceding the year 1600. In view of these goals the illustrations not related to this range can be skipped.
So can several illustrations for which the accompanying text provides no clear chronological information. This is the case with the illustration on p. 63 with the caption: "The young king Henry VI kneels at the golden shrine of St. Edmund, king of East Anglia" ... (no date)

The mention of Henry VI is an approximate clue to the dating, but the picture may have been made much later. Sometimes, even though the text accompanying the illustration contains no chronological dating of workable accuracy, such can be extracted from the body of the text of the monograph. This is the case with the illustration on p. 142, with the following caption: "Iconoclasm in action. The faces, hands and feet of the Apostles have been gouged off the wood on this rood screen in the church of St. Peter at Ringland in Norfolk".

An examination of the corresponding text on p. 140 suggests an approximate dating: the interval 1530-1570, which can then be used for constructing the function IL-142(t).
Several others among the illustrations related to the period preceding the year 1600 (on pp. 81, 100, 101 and 166) are ill-suited for use in this study because of uncertainty of the dating and therefore left out; when the entire construction is in place, additional analysis shows that this has not affected seriously the character of the CDIA.

The character of the functions of the type IL-$n(t)$ is such that the use of computer technology becomes expedient. The EXCEL package can be used conveniently for adding them up and drawing the graph of the sum

$$C(t) = \sum IL - n(t).$$

This sum, which in fact is the required CDIA for Strong for the period up to about 1600, is presented in the graph in Fig. 3. It is based on 123 out of 130 illustrations referring to this range.

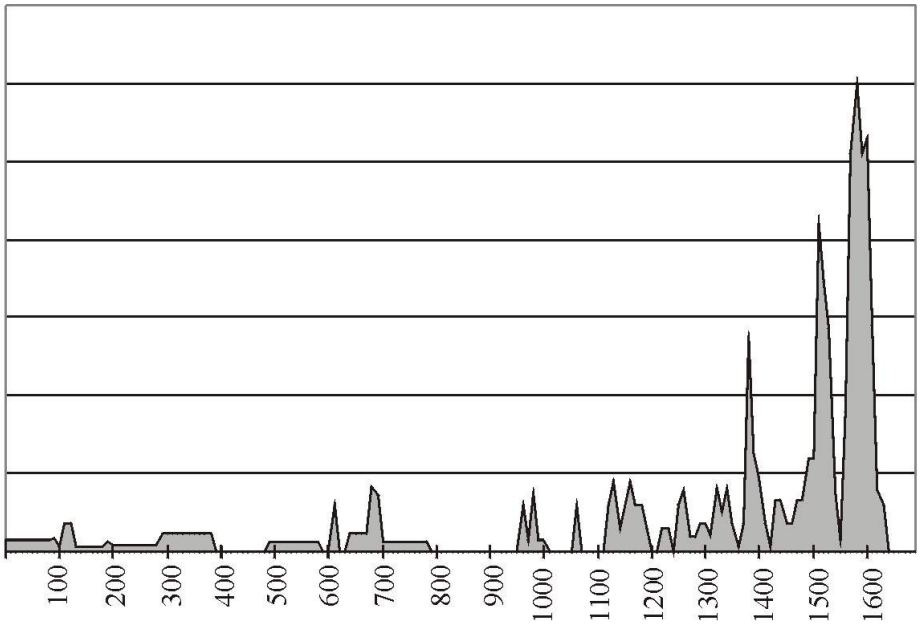

Figure 3. Chronological distribution of information about art (CDIA) for Strong (1999).

Now let us turn to another book: *The Thames and Hudson Encyclopaedia of British Art* [9]. Here is a brief annotation, taken from the book itself: "This essential companion is the only book in British art to cover every period from the Anglo-Saxons to present day, and every significant medium, from painting, sculpture and printmaking to medieval goldsmiths' work and stained glass. Here will be found clear, up-to-date information on hundreds of artists and on more general topics such as schools, concepts, techniques, institutions, patronage and art criticism. .... The entries are models of concision and have been compiled by an impressive list of scholars".

Like all editions of its kind, THEBA is composed of individual articles about monuments and figures of art, styles, schools, currents etc. Such structure is appropriate for the adequate chronological representation of information which for obvious reasons can be automatically interpreted as referring to art.

So there is the typical problem of obtaining a chronological distribution of information in a descriptive text. The ideas elaborated in the first author's article Tabov could be applied to it. They are based on regarding proper names as carriers of information. The object of examination there are narrative historical texts, so names can play this role. However, these ideas have to be modified and adapted for work with encyclopaedic material. This can be done by substituting the articles comprising THEBA for the names.

So in the second model for constructing a CDIA it is the articles that will serve as carriers of information for constructing the required distribution.

Again, the period up to about the year 1600 shall be considered, leaving out the articles that deal exclusively with the time after 1600.

Consider the article

Arundel, Thomas Howard, 2nd Earl of (1585-1646).

It obviously has to do with the period 1585-1646, or 1590-1650 when rounded. So the function defined will be

$$(\text{Arundel})(t) = \begin{cases} 10, \text{ if } t \text{ is in the range } (1590-1650) \\ 0, \text{ if } t \text{ is not in the range } (1590-1650) \end{cases}$$

The choice of the number 10 as the 'height' of this function is governed by the same rules as for the first model for constructing a CDIA, that is, the graph of the function should 'enclose' a rectangle with an area of 600 in the first quadrant.
For another example, take the article

Canterbury School of illumination: 1070-1160 (illustrated manuscripts).

The function obtained for it is

$$(\text{Canterbury School})(t) = \begin{cases} 6.66, \text{ if } t \text{ is in the range } (1070-1160) \\ 0, \text{ if } t \text{ is not in the range } (1070-1160) \end{cases}$$

Again the 'height' is governed by the rule for the area of the rectangle 'enclosed' by the graph of this function in the first quadrant.
There are articles in THEBA that can't be related to a definite, sufficiently brief time range, so their inclusion in the study is not appropriate. This is the case with the article on *drawing (medieval)*. It covers a very large period (at least 900 to 1450) and would not have a noticeable influence on the form of the graph of the CDIA. Likewise with the articles on *crosses of stone*; clearly such were made practically without interruption after the England's christening, so the time range is too large. For similar reasons we disregard the articles on *Gospel books*, *ivory carving*, *painting*, *psalter illustration*, *stained glass*, *tombs* etc., 20 in all.
Now the 140 functions so obtained have to be added up. Once more EXCEL can be used for this. The result obtained, which in fact is the required CDIA for THEBA for the period up to about 1600, is presented graphically on Fig. 4. This graph is based on 140 out of 160 articles on the time range in question.

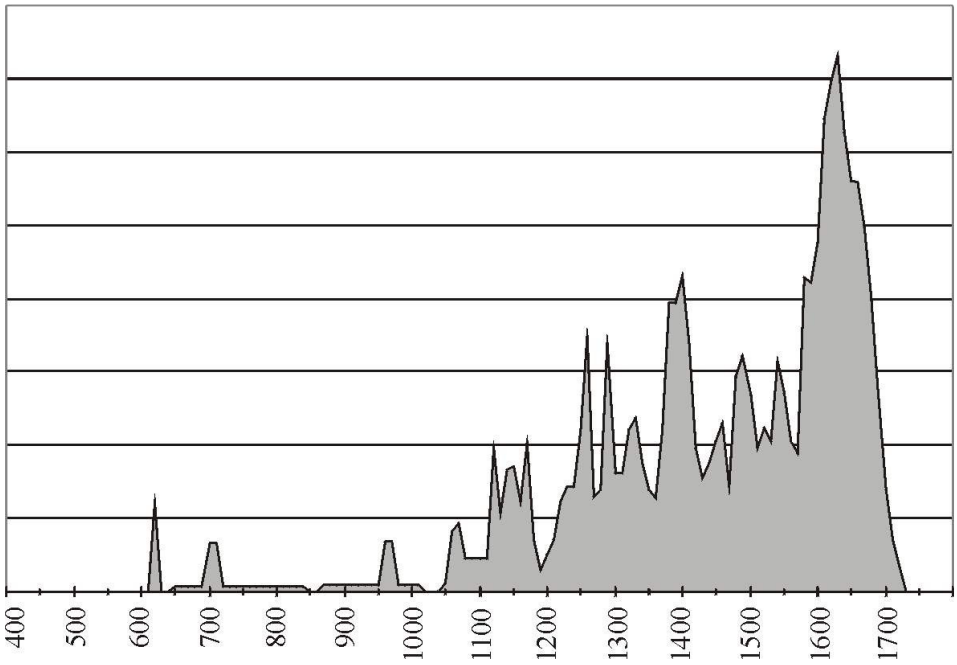

Figure 4. Chronological distribution of information about art (CDIA, second model) for THEBA (1985).

In the case of THEBA the method can be refined. Instead of participating in the sum on an equal basis, the functions corresponding to the articles can be weighted proportionally to the number of lines taken up by the articles in THEBA. This idea leads to a third model for constructing a CDIA. In order to explain it, let us return briefly to the article

Arundel, Thomas Howard, 2nd Earl of (1585-1646).

with which the construction of the second model began. Its informative text takes up 23 lines. So instead of the function (Arundel) (*t*) the function $23 \times$ (Arundel) (t) shall go into the sum. Further, in view of the fact that the article *Canterbury School of illumination* contains 51 lines of informative text, instead of the function (Canterbury School) (*t*) the function $51 \times$ (Canterbury School) (*t*) is taken, and so on. Using EXCEL again, a graphic representation of the CDIA for THEBA for the period preceding the year 1600 is obtained, as shown in Fig. 5.

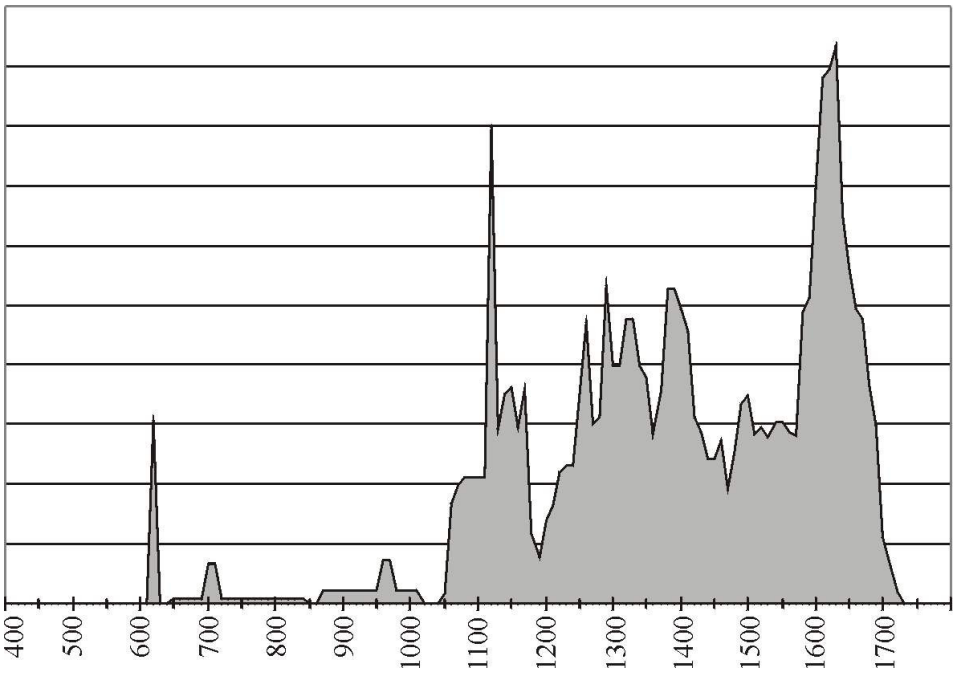

Figure 5. Chronological distribution of information about art (CDIA, third model) THEBA (1985).

In the context of the problems and ideas considered here, the third model of constructing a CDIA is more precise than the second one, but its use is more difficult and sometimes impossible.
It should be emphasised that in the context of THEBA the described third model leads in fact to the volume function introduced by Fomenko in Fomenko 1981; cf. also Fomenko et al. 1990 and Tabov.
The last object of this study is *Medieval Art of Western and Central Europe*, a volume of the series *A Short History of the Arts*, jointly published by Verlag der Kunst, Dresden, and Iskusstvo, Moscow [5]. In this case a modification of the first model for constructing a CDIA shall be used. Unlike the case of Strong, however, all objects of art discussed in the book, not only the illustrations, will be carriers of information here.
For example, on p. 146 the Cornford frescoes are mentioned, dated the second quarter of the 12th century. The corresponding function is

$$(\text{Cornford})(t) = \begin{cases} 20, \text{ if } t \text{ is in the range } (1120-1150) \\ 0, \text{ if } t \text{ is not in the range } (1120-1150) \end{cases}$$

For the San Michele church in Pavia (1117-1155), mentioned on p. 149, the function taken is

$$(\text{Pavia})(t) = \begin{cases} 15, \text{ if } t \text{ is in the range } (1120-1160) \\ 0, \text{ if } t \text{ is not in the range } (1120-1160) \end{cases}$$

The CDIA for MAWCE is obtained by adding up all such functions, 567 in all. The tool is MS EXCEL again. The result, the graph of CDIA, is shown in Fig. 6.

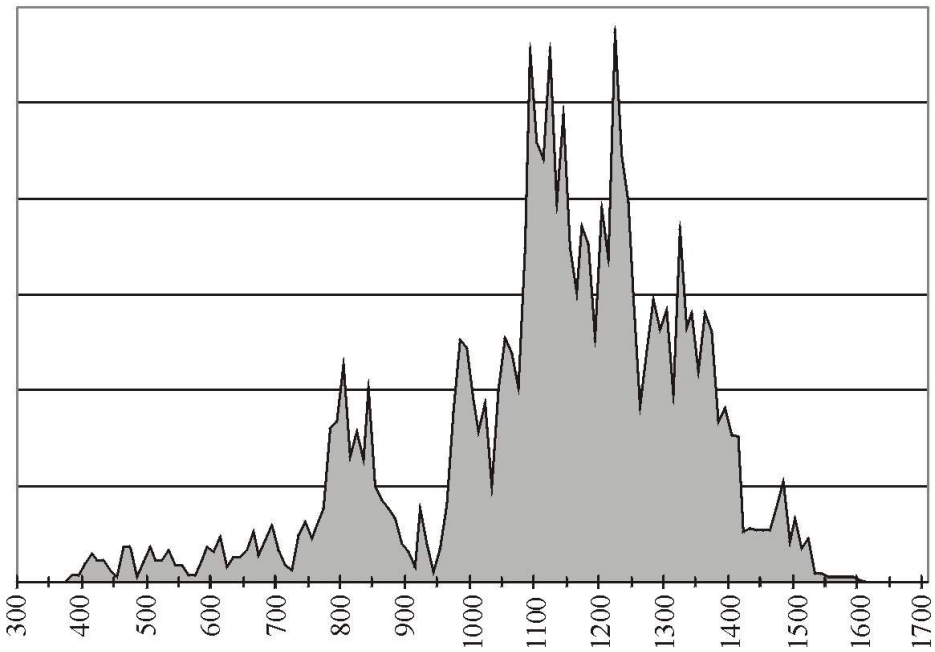

Figure 6. Chronological distribution of information about art (CDIA) for MAWCE (1981).

So were there any 'Dark Ages'?
In view of the graphs obtained, one could try to give an approximate answer to this question—with the reservation, to be sure, that it is merely a probable one, only being based on the information in THEBA and MAWCE, and that more detailed and complete studies could lead to its reassessment.
Figures 3, 4 and 5 suggest the conclusion that the 'Dark Ages' in Britain lasted practically to the end of the 10th century. Fig. 6 says more or less the same thing with regard to Europe: there, too, the period until the end of the 10th century can be described as 'Dark', with the exception of the time between the mid-eighth and the mid-ninth century. If so, what could have caused this 'cultural animation' beginning in the mid-eighth century and the subsequent decline in the mid-ninth century?
Of interest are also the data (according to Figures 3, 4 and 5) suggesting a decline in the cultural level of Britain after the mid-15th century, a probable effect of the Wars of the Roses.
The study of CDIA can, however, be very useful outside of the problems of the 'Dark Ages' as well, even outside of the framework of analysis of the chronological and art historical problems of the past. Let us highlight one more application that it can have to the benefit of all who are interested in old art.
The graphs of CDIA are compact and clear. They could be included in the annotations of the editions for which they are constructed. So the readers could be easily informed about the chronological classification of the information in the book. Using graphs similar to those of CDIA, scholars of art history requiring information about certain historical periods can skip editions that contain little of that and focus on editions in which 'their' age is well presented by monuments and data on them.

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