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The Process of Cognitive Distance: A Quantitative Analysis of some Aspects of Historical Culture

*Thijs Pollmann**

Abstract: The aim of this paper is to present some quantitative insight into the attention of both historians and non-historians to the past. The analysis is based on the frequency in which appear years in large text Corpora and bibliographical time-descriptors as specified by the Software of the electronic version of *Historical Abstracts*. The distribution of the attention to different parts of the past will appear to be remarkably similar for the two groups. We find an ever decreasing attention to the past as distance to the present is growing. The Speed of this decline might be characterized mathematically as an inverse-function. This might probably be explained by a natural process of Cognitive distance (Pollmann 1998). The larger the distance in time, the more difficult it is for the human mind to establish a relation between (an aspect of) the past and the present.

1. Introduction

The aim of this paper is to offer some insight into the attention of both historians and non-historians to the past. The analysis is based on quantitative data of a rather unusual nature: frequencies of years and bibliographical time-descriptors. The data-collections which provide for these data are twofold. The attention to the past of non-historians will be based on data derived from large text Corpora, especially the *British National Corpus*. Data for the historical profession will be frequencies of time-descriptors, gathered from the electronic edition of *Historical Abstracts*.

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The issues involved in this research bear on what Rüsen has called *Geschichtskultur*, historical culture, the position of historical thought in everyday life. My contribution will be related to two basic principles of historical culture: the constraints of human cognition in its attention to the historical past, and the distribution of the production of historical knowledge about the past. To be more specific, I will argue that it is possible to define at least partly a cognitive substrate of attention to the historical past, which is active in all public discourse. In a comparative perspective this cognitive substrate enables us to give some quantified weight to aspects of the efforts of the historical profession to contribute to the presence of the past in the culture.

There is a widespread intuition that forgetting is a function of time. The more time has passed since we experienced something, the more of it we have forgotten. This, however, does not hold for the experiences and memory of individuals only. It seems to apply for cultures too. The quantity of history that survives in a „collective memory“ of a culture, is believed to be also a function of the distance to the past. The question will not rise very often, but one might be sure that most people believe that they will be reminded more often to - for example - the beginning of the twentieth century than to the beginning of the fifteenth century. Even things we did not experience ourselves seem to be prone to a process of decay of memory and recollection. The question may be asked whether and to what extent the historical profession is able to withdraw itself from this process of decay of attention to the past.

There is some empirical research that seems to confirm the intuition we mentioned. Pandel (1991:6) found in a survey among German high school and university students on different aspects of their historical conscience: „Die Ereignisdichte des Temporalbewusstseins von Studenten ist im Mittelalter am geringsten und im 20. Jahrhundert mit 30.6% am grössten.“ In another survey among German *Abiturienten* Rüsen et alii (1991: 272) found that of all historical periods interviewees were most interested in contemporary history. No empirical results could be traced which try to add something about other age groups or nations. A cognitive or psychological approach to the mental processing of the non-experienced past seems to be non-existent.¹

2. Computing the distribution of attention to the past in text-Corpora

Recently the occurrence of years in large Corpora of newspaper texts have been used to get a more detailed picture of the way the attention of non-historians over the past is distributed. (Pollmann 1998; submitted) Data-sources were the 1994 volumes of seven newspapers from six different countries: the German

¹ Rubin (1998) came too late to my attention to incorporate it in my research.

Frankfurter Allgemeine Zeitung (FAZ), the Europe based American newspaper *International Herald Tribune*, the British *Times* and *Sunday Times*, the French *Le Monde*, the Spanish *El Mundo*, and the Dutch *NRC/Handelsblad* and *de Volkskrant*. Of the last one the 1993 edition too was explored. These volumes are available on CD-roms, or (in the case of *NRC/Handelsblad*) as a lexicologically enriched database of the *Instituut voor Nederlandse Lexicologie* (INL; *Institute for Dutch Lexicology*). Fortunately, these sources generally do not contain any lists of numerical data: election results, data of exchange markets and the like. Where this was the case (as in the FAZ), these data were neglected. The sources contain between 10 and 40 million words.

It was assumed that the mentioning of a certain year in a newspaper, devoid of historical content as it is otherwise, is a sign of attention paid to an aspect of the past: a critic's note about a new production of Mozart's *Magic Flute* in which the year 1795 is mentioned; an announcement of a book auction, selling an incunabulum dating from 1483; a commemoration of the end of the Vietnam war, mentioning the year 1973 etc.. Of course, as these examples try to illustrate, this does not necessarily mean that the year is used in a history context. But texts written on the basis of historical research certainly are not excluded from newspaper columns.²

The use of years in these six newspapers was found to be remarkably similar, as far as the distribution of the years over the past is concerned. As might be expected some peaks were found for years or periods with remarkable positions in the conscience of a culture: the second world war, 1933, the first world war, the Dutch Golden Age etc. But, corresponding to the intuitions mentioned earlier, the analysis also brought to light an underlying tendency of decreasing frequencies as the distance of the different years to 1994 becomes larger and larger. This process of decay of attention to the historical past, thus made operational, turned out to be independent of the newspaper, of the language and of the 'year density', the total amount of attention paid to the past in terms of the sum of years in each source.

The similarity between the Corpora was confirmed for the years found in an English and a Dutch language Corpus dating from the sixties. Therefore, there is some reason to believe that the distribution of attention over the past is also independent of the year of publication of the texts.

In all Corpora the Speed of the decay of the attention to the historical past is mathematically best described as an inverse-function. This means that the attention to the historical past is inversely proportional to the distance in the past. Looking for an explanation of this remarkable constancy it was argued (Vollmann 1998) that the process of forgetting the historical past is a natural process. Being a methodological individualist and thus avoiding to postulate

² Cf. Schörken (1995) who presents a survey of forms of historical knowledge in newspapers.

supra-individual entities as bearers of a kind of cultural memories³ (cf. Boyarin 1994: 23 sq; Lorenz 1987: 183 sq), I suggested that the decay of knowledge of the past is an effect of cognitive distance. It is increasingly difficult for the human mind to establish a relation between (an aspect of) the past and the present, the larger the distance in time. The fact that different year densities do not influence the Speed of this process might be explained by the principle that historical interest generates historical interest. The more attention people have for historical things in general, the easier it is to connect this interest to other persons and events from (other parts of) the past.

The empirical underpinning of the intuitions we started with, might be strengthened further if the results above can be reduplicated for text collections which are as representative for a culture as possible. It was mainly for this reason that recently new data have been collected from one of the largest digitally available text collections in the world, the *British National Corpus*. This is a corpus of modern English, both spoken and written. It consists of over 100 million words.⁴ And, what might be more important for our purposes, among linguists the corpus is considered to be the best existing representation of the actual British language. As the Web-site of the corpus announces:

„The Corpus is designed to represent as wide a range of modern British English as possible. The written part (90%) includes, for example, extracts from regional and national newspapers, specialist periodicals and journals for all ages and interests, academic books and popular fiction, published and unpublished letters and memoranda, school and university essays, among many other kinds of text. The spoken part (10%) includes a large amount of unscripted informal conversation, recorded by volunteers selected from different age, region and social classes in a demographically balanced way, together with spoken language collected in all kinds of different contexts, ranging from formal business or government meetings to radio Shows and phone-ins.“

It is believed

„that the Corpus will be useful for a very wide variety of research purposes, in fields as distinct as lexicography, artificial intelligence, Speech recognition and synthesis, literary studies, and all varieties of linguistics.“⁵

Although the notion ‘representative for a language’ is a difficult one,⁶ the carefulness with which the *British National Corpus* was assembled makes it fair to say that it is the best existing representation of the different ways the English language is used in Britain.

³ And, of course, not implicating that memory is not „attached to membership of social groups“ (Fentress and Wickham (1992: ix).

⁴ This is said to be as much as 10 meter books printed an thin paper.

⁵ (<http://info.ox.ac.uk/bnc/what/index.html>)

⁶ Cf. among many others Altmann (1992), McEnery and Wilson (1996), Aston and Burnard (1998).

The usefulness of the corpus is greatly enhanced by its possibility to select those texts which satisfy certain conditions: Sex, age, social class of both speakers/writers and their intended audiences, regional origin, etc.⁷

In contrast with the newspaper Corpora not all texts included in the *British National Corpus* have been published or „uttered“ in the same year. Nevertheless, nearly 90% of the texts dates from the period 1975-1993. I will assume for the rest of this paper that all texts date from the mean of this period, 1984.

From the *British National Corpus* the frequencies of the numbers in the range 1991-1450⁸ were collected.⁹ Almost all these numbers turn out to be years. For the round numbers 1900, 1800, 1700, 1600, 1500 the data were adjusted on the basis of the proportion of non-years in fifty randomly Chosen examples.

The Corpus contains about 220000 years. This means that one in every 454 words is a year. This year-density corresponds with those found earlier for the newspaper Corpora (Pollmann submitted).

All years in the range 1991-1450 are represented with at least 6 occurrences.¹⁰

With the statistical Software SPSS 7.5 the best mathematical expression for year frequencies from 1984-1450 has been computed. This turns out to be the Inverse-function again.¹¹ In figure 1 the data for the period 1984-1450 and the computed fit curve are presented.

The line is a rather regular slope with some small peaks at regular places (‘round’ years). 1945 and 1914 also are easily visible. The fifties of this century are rather underrepresented, at least if we take the fit-curve to be the measure of representativity. We get a more detailed picture of the attention to the past when some parts of the data line of figure 1 are blown up. This is done in figure 2 for the period 1984-1884. Here one can easily recognize the special attention British people pay to the war-years 1945, 1939 and 1938, and to 1979, 1968, 1948 and 1914 for obvious reasons.

The analysis up to this point justifies the conclusion that generally spoken the data reflect the distribution of the interest in the past of the British people in the period 1975-1993. As it is in full concordance with the findings in Pollmann 1998, it might be concluded that due to a probably natural process of cognitive distance we find an ever decreasing attention to the past as the distance from the present grows. The Speed of the process might mathematically be characterised as an inverse-function and is inversely proportional to the distance in time. At some points there are additional traces of a cultural heritage of memorable years.

⁷ One can find a survey of all the variables taken into account on the homepage of the BNC, (<http://info.ox.ac.uk/bnc/what/balance.html>). See also Aston and Burnard (1998).

⁸ To underline the non-historical position of the observer of the data pairs of years denoting a historical period will be given in the reversed order.

⁹ The reason for the choice of 1450 will become clear below

¹⁰ The years with this lowest frequency are 1466, 1463 and 1452.

¹¹ The Rsq. of the fit-function is 0,969; F= 16697,4. Both figures are satisfactorily high.

Figure 1: Frequencies of years 1984-1450 in the *British National Corpus* as a time series (line) and its inverse fit function (strokes).

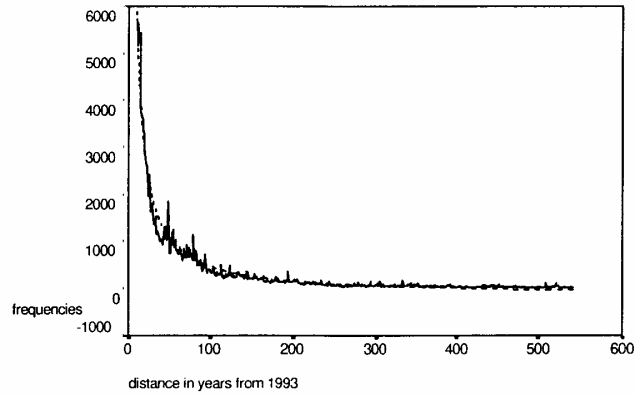
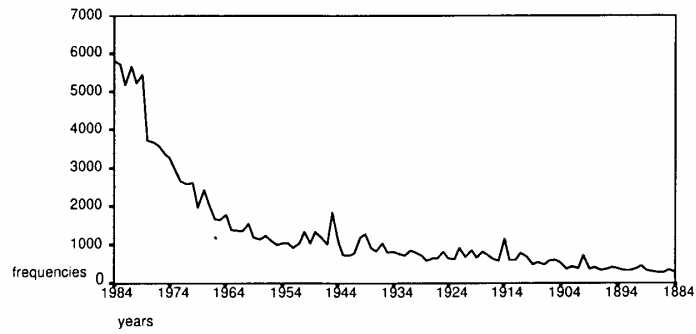


Figure 2: Frequencies of years in the *British National Corpus* for the period 1984-1884.



3. The distribution of the attention to the past in the historical profession

We will contrast these findings with data related to the attention historians have for the past. If the *British National Corpus* reflects the natural situation, we can use the findings as a calibrated tool to find out what other groups do, in contrast to a population in general. And for obvious reasons, historians are an interesting case.

At first, one might have the conviction that historians are completely free in their choice of the historical period they will pay attention to. Of course, their activities will sometimes be directed by customers or political authorities.¹² But most of the time there will be national and institutional research policies and programs which restrict the free choice of the historian. And one might suppose that these will also drive the attention to subjects, periods and developments which are interesting from a rather independent, „pure historical“ point of view. It is not clear why the work of a group whose cultural task might be described as to rescue the past from oblivion, will be subordinate to mental processes of forgetting.

At second sight, however, it is uncertain to what extent historians are able to resist the cultural forces of their environment. As is well known, most history students have an interest in contemporary history.¹³ And one would be surprised if the fifteenth century will turn up as a period of historical research of a far more intensive nature than the twentieth or nineteenth centuries.

Due to the electronic version of *Historical Abstracts*, a well known bibliography of historical research, it is possible to look for an empirical motivated answer to this kind of issues. *Historical Abstracts*¹⁴ offers abstracts of papers from about 2100 journals, and - since 1980 - from books and dissertations. It covers the history since 1450 with an exception of the history of the United States and Canada. In its electronic edition of autumn 1997 which I used, one can find information on more than 270.000 papers and more than 70.000 books and dissertations, for the most part published between 1980 and 1995.

One of the innovations of the electronic edition¹⁵ is the detailed information one can get about the periods covered by these publications. It is possible to look for information on each decade, or series of decades, century or series of centuries to which books and papers refer. The browser of the *Historical Abstracts* software specifies the sums of all different time-descriptors in the whole collection. Using one or more time-descriptors in a query one will easily find

¹² Cf. among many others Michel-Rolph Trouillot (1995).

¹³ Cf. Cowan (1996: 30).

¹⁴ On *Historical Abstracts* see Falk (1980).

¹⁵ It seems to me that *Historical Abstracts* might be used for all kinds of comparative-sociological questions of the historical profession.

all publications on any decade or century. For example, one can easily find out that there are 9002 publications in *Historical Abstracts* which refer to the second decade of the nineteenth century. Among them one will find the paper of J.L. van Zanden on the rise of a class of freehold peasants in Overijssel (The Netherlands) 1750-1830 classified at all decade time-descriptors from 1750-1759 to 1830-1839 and both the eighteenth and nineteenth centuries; and the paper of Arnold Heertje, 'Three unpublished letters by David Ricardo' in *History of Political Economy* classified as a paper of the nineteenth century, and of the second and third decade of that century. When the perspective of a book or paper is broader, *Historical Abstracts* uses just centuries as time-descriptors.

On the basis of, these time-descriptors it is easy to get an impression of the distribution of the interest of historians in the past, at least their interest between 1980 and 1995 for the history between 1450 and 1990 with an exception for North-American history. Table 1 presents the data for centuries and decades grouped to centuries for the 20th to (the second half of) the 15th century.

Table 1: numbers of publications in Historical Abstracts with centuries and decades as time-descriptor (decades have been grouped to centuries).

	centuries	decades grouped to centuries
20th century	229.381	351.849
19th century	120.244	162.982
18th century	55.991	53.173
17 th century	37.946	30.516
16 th century	30.644	25.503
15 th century (second half)	10.065	7.105

It is easy to see that the attention of historians for historical periods declines as the distance to the past is growing. Cf. figure 3. As such this decline might be characterised as a manifestation of the process of forgetting to which all experiences are liable.¹⁶ The data of table 1 in itself do not reveal anything about the effect of the cultural force of the historical profession in determining

¹⁶ The *International Medieval Bibliography* Shows a comparable decline over the centuries. The Software of the electronic bibliography does not offer decade specifications.

a counter-movement against this natural process and mentally determined speed of oblivion.¹⁷

One gets a more detailed picture when the data for the decades are specified. This is done in figure 4. The line of the *Historical Abstracts* Shows peaks for the decades of the two world wars (1949-1940) and (1919-1910) and for the last decades of the eighteenth century. The last one will be a reflection of the complex of events related to Enlightenment, French Revolution and Napoleonic wars.

A closer look to the oldest part of the line (figure 5) reveals peaks around 1700, a peak around 1600, and two smaller ones at the end of the fifteenth and the beginning of the sixteenth century. It is not immediately clear whether these peaks reflect basic political, cultural or social developments of an extraordinary importance on a world scale, or have to be Seen as the accidental addition of different interesting events an a national or regional scale. Inversely, the dips which this figure Shows for the middle of the eighteenth and seventeenth centuries, and for the decades around 1540, are not easily to be interpreted either as mirroring uninteresting periods or periods neglected by the historical profession. More details are needed to give these data an interpretation.

In interpreting lines like those of figure 4 and 5, a kind of norm or Standard is indispensable. There must be independent reasons to qualify any frequency as high or low. Without such an independent established and theoretically warranted norm, frequency differences are just that: frequency differences.

4. Explaining the apparent difference in the interest for the contemporary past

Going back to figure 4, it depicts not only the data of *Historical Abstracts* but also those of the *British National Corpus*, All frequencies have been converted to percentages, and the years of the *British National Corpus* have been grouped to quasi-decades, 10 year averages of the numbers of years. This enables a comparison between the two sets of data. If the line of the *British National Corpus*, or rather the inverse fit curve of this line, is conceived as imaging the mental historical competence of human beings in a kind of calibrated form, the departure of the norm in the *Historical Abstracts* data might be said to be due to the cultural forces operating in the historical profession. If this conclusion is sound, than all kinds of comparisons on other levels can be examined with the same method. After all, the Software of *Historical Abstracts* has other browser

¹⁷ It might be argued that this decline is a function of a gradually diminishing number of historical sources, rather than a function of diminishing attention. This, however, seems to me not in accordance with the fact that it is not the quantity of the sources but their content which makes them fit for historical research.

indexes Lind some of them permit the definition of all kinds of interesting subparts of the bibliographical collection.

Figure 3: Distribution of numbers of time-descriptors (decadesgrouped-to-centuries (line) and centuries (strokes)) in *Historical Abstracts* over the period 1990-1450

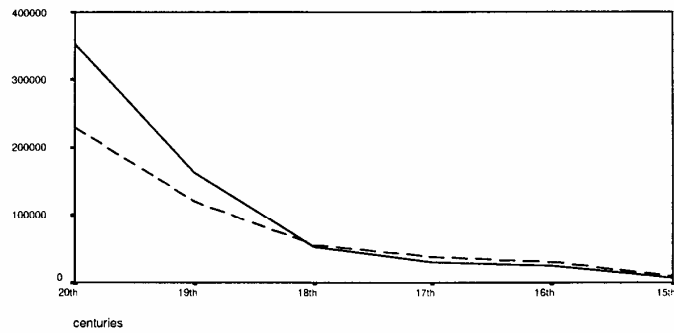


Figure 4: Percentages of historical publications in *Historical Abstracts* (line) and the 10-year averages of numbers of years in *British National Corpus* (strokes) distributed over the decades from 1979/70 to 1459-1450

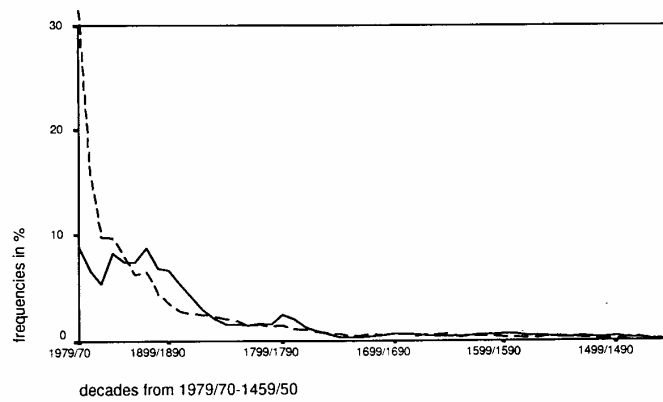
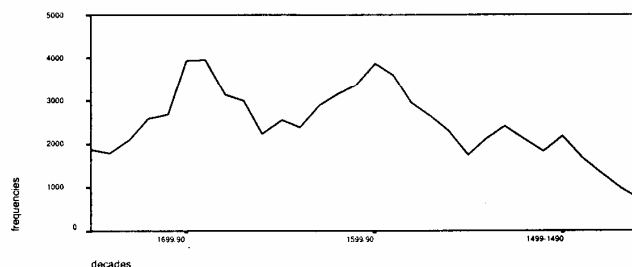


Figure 5: Frequencies of decades as time-descriptors in *Historical Abstracts* for the period 1750-1450



Meanwhile one most remarkable difference between the attention of the past of historians and non-historians is already clearly visible. A large part of all the historical attention paid to the past goes to the contemporary decades, but clearly not to the most recent ones. It is the most obvious difference between the two sets of data. One is wondering why this is the case? Why is not the line of *Historical Abstracts* closer to the BNC-line? Is it because historians believe that historical research has to keep some distance to the time when the events took place? Is it the unavailability of archives? Is it because of some hidden assumptions of *Historical Abstracts* about the domain of historical research?

Indeed, I will argue, there is a lot of historical research not covered by *Historical Abstracts*. At times, sociologists, political scientists, economists etc. contribute to our knowledge of the past, probably of the most recent past. And *Historical Abstracts* does not entirely cover this kind of historical knowledge. To support this view I looked again for some quantitative bibliographical data. Although there are no data available which might be seen as the social sciences complement of the historical production, the following might do to underpin the idea that a lot of research on contemporary history is done outside the domain of the historical profession. The data were supplied by *Sociofile* 1974-6/98, an electronic bibliography for the social sciences. *Sociofile* covers about 2500 journals. It describes its own range as follows:

„Approximately 2500 journals in 30 different languages from about 55 countries are scanned for inclusion, covering sociological topics in fields such as anthropology, economics, education, medicine, community development, philosophy, demography, political science, and social psychology.

Sociofile does not use time-descriptors as *Historical Abstracts* does. So it is impossible to compare the two bibliographies directly. To get somewhere one has to look for aspects of the bibliographical information *Sociofile* does offer.

Pairs of years in a text will almost always denote a historical period. Such expressions might be taken to be indicators of historical texts. Abstracts in which those expressions appear, will almost always be abstracts of publications which will count as contributions to our historical knowledge. From *Sociofile* those abstracts were collected which have in one of their fields pairs of years like '1950-1970', '1960-1970', '1980-1985' etc. denoting periods of 20, 10 or 5 years. The journals were noted down on which these abstracts were based with a maximum of 100 abstracts for each expression. And it was counted how many of these journals are mentioned in the journal index of *Historical Abstracts*. Table 2 presents the results.

Suggestive as the data of table 2 are, they fully support the idea that a substantial part of the production of historical knowledge stems from other research domains than the historical one. This especially seems to be the case where small periods of 5 years have been subject of inquiry.

These data taken into account, there seems to be every reason to believe that the sum of the historical knowledge, produced either by historians or others will turn out to be distributed over the past in the same way as the attention to the past in the newspapers is, and as properties of our mental endowment seem to dictate.

The point might be raised whether the knowledge about the past produced by the social scientists and historians proper does not differ on a more fundamental level. It might be put forward that social scientists will be more analytical and data-oriented, and historians more coherence-oriented and concentrated on the narrative aspects of history writing. I doubt, however, whether this is a matter of principle as far as the presented data is concerned. I think that it is more easy for a social scientist to answer some questions concerning contemporary history, not because of the fact that there is a fundamental difference between contemporary historical objects and older ones, but because of the fact that it is more easy to link them to subjects one knows, with methods to which one is accustomed.

4. Conclusions

To conclude, in this paper I have tried to characterise one of the basics of our historical culture, the relative presence of pairs of the past (years, decades, centuries) in our historical conscience. It has been shown that the distribution of attention to the past is reflected in the production of historical knowledge. Both the presence of the past in the newspapers and the production of historical knowledge diminish as a function of the time elapsed between present and past described. There is no reason to think that both processes of decay of the past are independent of each other. Cognitive distance seems to be a determining factor in the production of historical knowledge as it is in the attention to the

past among lay-people. In his well known *Zeit und Sinn* Rösen remarks that there are two ways to rationally appreciate knowledge of the past. It might meet one's practical needs for orientation in time and it might be scientifically justified. Of course, „Es kommt [...] darauf an, beide Vernunftmöglichkeiten von Geschichten so zu realisieren, dass sie sich weder gegenseitig einschränken oder negieren, noch einfach ineinsfallen, sondern sich gegenseitig hervorrufen und steigern.“(Rösen 1990: 107) It seems to me that the analysis above shows that unconsciously the need for orientation in time is a strong factor in the choice for particular parts of history.

The preponderance of contemporary history, however, seems to be balanced by the principle already mentioned, that historical interest generates historical interest. This explains that historians, teachers and politicians when they are worried about the quantity of attention schools and media are paying to historical subjects, - and there are quite a few examples of their concern about a real or alleged degeneration of what people know about history¹⁸ - never characterise the deficiencies in terms of periods of the past. In my opinion they implicitly express the idea that orientation in time, though inevitably departing from the present, may start everywhere, and that in a historically educated mind the present will never be far away.

¹⁸ For some collections of expressions of concern See Fayard 1985; Gagnon 1989

Table 2: Numbers of abstracts in *Sociofile* in which expressions occur of pairs of years as indicated, and the percentages of the journals which published the papers on which the abstracts are based, and which *Historical Abstracts* did and did not index.

expression	abstracts of publi-cations in <i>Sociofile</i> containing the expression	% of journals not indexed in <i>Historical Abstracts</i>	% of journals indexed in <i>Historical Abstracts</i>
'1950-1970'	103	45	55
'1960-1980'	263	56	44
'1970-1990'	136	50	50
'1950-1960'	36	46	54
'1960-1970'	184	30	70
'1970-1980'	265	52	48
'1980-1990'	169	71	29
'1950-1955'	6	84	16
'1955-1960'	12	60	40
'1960-1965'	13	81	19
'1965-1970'	54	63	37
'1970-1975'	54	62	38
'1975-1980'	100	64	36
'1980-1985'	100	77	23
'1985-1990'	85	72	28

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