'Index': the word, its history, meanings and usages

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The word 'index', its etymology, semantics, and pragmatics (its use in book indexing, music, mathematics, printing, science, industry, economics, and public administration), derivations and relation to other concepts and their terms are investigated, based on listings of usage in the major English dictionaries.

If you are asked at a wine and cheese party (these are now becoming more popular, at least in the United States, than cocktail parties) what your profession or hobby is, and you answer proudly, 'I am an indexer', you may, depending on the background of your inquirer, be assumed to be a mathematician, a physicist concerned with optics, an anthropologist, a paleontologist, a geologist, an economist, a mechanical engineer, a forestry expert or a computer scientist; or possibly even a printer, a designer of playing cards, an employee of a motor vehicle licensing agency; or, of course, a person who tries to make the contents of books and journals retrievable by listing names and subjects in a predictable order, with an indication of their physical place in the source—in brief, an indexer of the kind that is most likely to read these lines. (Conversely, if you were applying for a credit card, stating your profession as 'indexer', you might be rebuffed by a terse computer-printed note, 'No such occupation', as happened recently to an acquaintance of mine.)

It is of course not unusual for a common term to acquire specialized meanings in various branches of science, technology or business, but the word index, which the members of our Societies tend to think of only, or mostly, in connection with their profession or hobby, has a particularly rich variety of applications. The reason for this is that the root of the word expresses a fundamental communicative action that transcends all languages and probably preceded them in the evolution of man: to show something to another human being by pointing to it with an outstretched forefinger.

Etymology: where does it come from?

On looking up the word index in general English dictionaries that provide etymologies, or even in those specifically devoted to the history and genealogy of English words, such as the Oxford dictionary of English etymology1 or the work by Klein2, you will find only that it is directly derived from the identical Latin word which originally meant 'that which points out', hence, 'forefinger, pointer'. To elicit more information, we must turn to large Latin dictionaries, where we may find that index also came to mean any kind of indicator, sign, token or marker; a person who reveals or points out (from which developed the sense of one that betrays a secret, an informer, and a look-out man); the title slip of a scroll, and hence the title of a book; a summary or digest of a book or its table of contents; a list or catalogue of books and their authors; and an inscription or caption. Many, but not all, of these shades of meanings have been preserved until our own time, and others, as we shall see, have been added. The noun in turn was derived from the stem of the verb dicare which meant literally 'to show' and the prefix in-, used to indicate the direction from a point outside to one within a limited distance, thus generating the verb indicare which meant 'to make known, point out, reveal, declare, give essential information', but also assumed the metaphorical (and more sinister) meanings of 'to disclose, divulge, betray, give away, inform on' (a direct descendant of which is the English verb 'to indict'). Closely related both in form and meaning is the verb indicere (in + dicere) which means 'to give notice of, proclaim, announce, declare (war), impose and inflict (e.g. punishment)'.

To revert to the noun index, its ending -ex is the result of a simplified phonemic spelling, the x expressing the combined sounds of the final c of dic- (pronounced /k/) and the affix -s which indicates the noun form. The x is used only in the singular, index, whereas in the plural, indices, the c and s reappear. So far, we have traced index back to its Latin origins—but where did the Latin root come from? For an answer to this question, we must turn to works such as the Lateinisches etymologisches Wörterbuch3 or the more general Indogermanisches etymologisches Wörterbuch.4

When Latin became a written language it was already a highly developed and relatively late branch of the ancient and far-flung family of Indo-European (IE) languages. One of the remarkable features of the root of the word index is the fact that it, together with relatively few other

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roots, such as those for kinship terms (father, mother, brother, sister) is found not only in most IE languages, but that it also preserved its basic form from the most ancient ones of which we have documentary evidence and down to the present form in various languages; moreover, these forms are easily recognizable even to someone not trained in comparative linguistics. Historical linguists assume that there once was a common IE root *deik (the asterisk indicates that the word is conjectural, i.e. not attested by actual written documents), meaning 'to show, point out'. It can be recognized in Sanskrit didēṣṭi ‘to show’, and diśā ‘direction’, as also in Avestan (the oldest known member of the Indo-Iranian branch of IE, spoken in eastern Iran during the second millennium BC) which has disyeiti, and Hittite (an IE-related language spoken in Anatolia between 2000 and 700 BC) which has tekkusami ‘I show’, the first syllable of which is considered to be related to the IE root. In classical Greek we find the verb deiknunai ‘to show’ and the related deixai ‘to point out’, from which the noun deiktēs ‘index, pointer’ is derived, still being used also in modern Greek, although the word for book index is now heureterion, derived from a root meaning 'to find'. (Both words have found their way into English in the form of the adjectives deictic and heuristic.)

Turning to the contemporaries of Latin in northern Europe, we find Old English taecan ‘to show, instruct’ (from which teach is derived) and also tācn ‘sign, mark’ (our token). In Old High German there is zeigen ‘to point out’ but also ‘to accuse’ (from which comes the modern German zeigen ‘to show, point out’ and the now somewhat obsolete zeihen ‘to accuse’. In German as well as in many other IE languages, including Latin, as we have seen, the word for ‘to show, point out’ also assumed the meaning or was related to one that meant ‘to accuse, indict’, evidently because the victim of a misdeed or crime pointed out its perpetrator to a judge, a practice still followed in our courts where witnesses are asked to point out the person they are testifying about.

Since Latin was the IE language that rose to prominence and later to dominance during two millennia, giving birth to daughter languages spoken around the Mediterranean and beyond, both the verb and the noun entered their vocabulary, and at a later date also that of the Germanic languages, whether by way of conquest or by cultural infiltration at a time when several vernaculars were spoken, but only Latin was the language of worship and of learned discourse, both spoken and written. Thus, the word index has now become part of the vocabulary of every European language, including those of non-IE origin, such as Finnish and Hungarian, although these languages have also developed their own words for the concept, namely hakemisto and mutató respectively. The meaning of the word is also fairly uniform across the languages of Europe (which of course includes their use in other parts of the world) as far as book indexes are concerned (with the major exceptions of German, which uses Register, and Russian, which has ukazatel’), and the use of the term in economics is now also quite international. Yet in addition to these translnguially accepted meanings, the word index as used in English has acquired a plethora of meanings and denotations, some of which go far beyond its basic concept.

Grammar: indices or indexes?

The singular form of the word in English is index, but the plural may be written both in the traditional Latin form indices and in the Anglicized form indexes. The former is now generally thought to be obsolete and archaic, except in mathematics and occasionally in other scientific applications. The Latin plural should certainly not be used in the bibliographic sense, where it would be utterly stilted to say ‘I compiled the indices to several books’. This was recognized already in the late 19th century when the fascicle of the Oxford English dictionary (OED) containing the word index was edited (it was published in 1900).

Semantics: what does it mean?

The various meanings in which the English word index and some of its derivations are used in different branches of scholarship and technology have been collected from the two most comprehensive and prestigious sources namely the OED, including its new supplement, and Webster. The former is by far the more exhaustive, not only regarding the quotations on which the lexical meanings are based, but also regarding the number of such different or variant meanings. Webster offers however a few combinations of index with other words not found in the OED, and one additional combination was found in the Dictionary of American English (DAE).

Definitions of meanings and usages have been slightly adapted and shortened for the purpose of this article, and are not necessarily identical with those given in the respective sources. The year of the earliest recorded quotation for a particular sense is given below in parentheses after the definition, but it should be borne in mind that these dates indicate often, not the very first written occurrence, but only the earliest that came to the attention of the OED lexicographers. At any rate, words were always used orally as well as in private and ephemeral writing (e.g. in letters and notes) long before they found their way into more permanent documents, so that the OED dates should be seen only as an approximation of the actual first use of a word. Since both the OED and Webster are found in almost any library, and many indexers keep either one or both on their reference shelves, only a few quotations will be given here because they would take up too much space and can easily be looked up.
**Literal senses**

The OED senses 1-3 might be called the literal senses of index, namely: forefinger, often, but not exclusively, when used in an anatomical context (1398); a piece of material that serves as a pointer, particularly on a graduated scale of an instrument (1594), and especially so on surveying instruments (1571); the hand of a clock or watch, and the gnomon of a sundial (1594).

**Metaphorical senses**

OED sense 4 is the metaphorical use of index, meaning a guiding principle (1598) and a sign or token of something else (1607).

**Figurative senses**

The OED senses 5-10 may be called figurative or applied, in that the noun index, its combinations with other nouns, and its derivations to index, indexing, etc., are being used for various devices, methods or tools which in one way or another are linked to the basic concept of showing or pointing out, even though a few applications seem to be rather far-fetched and only tenuously connected with the basic sense.

**Pragmatics: how is it used?**

The following branches of learning and industry are listed here in the order in which their earliest use of the word index has been recorded in the OED or other sources.

**Book indexes**

Members of the Societies of Indexers may well take pride in the fact that this sense of index is indeed the oldest among the figurative or applied senses of the word, and that this specific usage (like the word itself) goes back to ancient Rome. There, when used in relation to literary works, the term index was used for the little slip attached to papyrus scrolls on which the title of the work (and sometimes also the name of the author) was written, so that each scroll on the shelves could be easily identified without having to pull them out for inspection: ‘... membranulam, ex qua indices fiant, quos vos Graeci ... siliusbus appelleatis’ (a piece of parchment from which title slips are made which you Greeks call siliusbus) (Cicero, Atticus 4.4a.1). From this developed the usage of index for the title of books: ‘Sunt duo libelli diverso titulo, alteri “gladius”, alteri “pugio” index erat’ (There are two books with different titles, one called ‘The sword’, the other having the title ‘The dagger’) (Suetonius, Caligula 49.3). Those two books, by the way, were what we would call today ‘hit lists’ of people whom Caligula wished to have assassinated, shortly before that same fate befell him. At about the same time, in the first century AD, the meaning of the word was extended from ‘title’ to a table of contents or a list of chapters (sometimes with a brief abstract of their contents) and hence to a bibliographical list or catalog. Thus, Pliny the Younger (Epistulae 3.5.2) writes to his friend Baebius Macer who had asked for a list of books by Pliny the Elder, the author of Historia naturalis: ‘Fungar indicis partibus, atque etiam, quo sint ordine scripti [libri] notum tibi faciam’ (I will provide for you a bibliography and arrange it in chronological order). Similarly, Seneca (Epistulae, 39) tells a certain Lucilius, who had asked him to suggest suitable sources for a ‘cram course’ in philosophy: ‘Sume in manus indicem philosophorum’ (Pick up the list of philosophers), referring to a list of authors’ names and the topics on which they had written.

However, indexes in the modern sense, giving exact locations of names and subjects in a book, were not compiled in antiquity, and only very few seem to have been made before the age of printing. There are several reasons for this. First, as long as books were written in the form of scrolls, there were neither page nor sheet numbers nor line counts (as we have them now for classical texts). Also, even had there been such numerical indicators, it would have been impractical to append an index giving exact references, because to consult the index, the scroll would have to be unrolled to the very end and then to be rolled back to the relevant page. (Whoever has had to read a book available only on microfilm, the modern successor of the papyrus scroll, will have experienced how difficult and inconvenient it is to go from the index to the text.) Second, even though popular works were written in many copies (sometimes up to several hundreds) no two of them would be exactly the same, so that an index could at best have been made to chapters or paragraphs, but not to exact pages. Yet such a division of texts was rarely done (the one we have now for classical texts is mostly the work of medieval and Renaissance scholars). Only the invention of printing around 1450 produced identical copies of books in large numbers, so that soon afterwards the first indexes began to be compiled, especially those to books of reference such as herbals, as I have shown earlier in this journal. The terms index and table were however applied somewhat indiscriminately to tables of contents (following the example of the ancients) and to indexes proper, i.e. those of names and subjects, the latter inserted either after the table of contents or, increasingly towards the middle of the 16th century, at the end of the book. Although the now obsolete use of index for ‘Table of contents’ preceded that of an alphabetical list of names and subjects, the OED lists the first reference to the latter in 1578, while the former is taken from Shakespeare’s use of the word (1604) which in every instance refers to something preceding the main work (as is the case for a table of contents). For the alphabetical listing of names, subjects, and words the more specific Latin terms index nominum, index rerum, and index verborum respectively, were used in Latin as well as in some English scholarly works until the end of the 19th century, but are now fairly obsolete.

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Index librorum prohibitorum (ILP)

Closely related in time to the first modern indexes, the purpose of which it was to make the finding of names and subjects in books easier, the infamous ILP was intended to conceal information from good Catholics who were not supposed to read the books listed in the Index at all. First published in 1564, it was soon followed in 1571 by the Index expurgatorius which allowed people to read some of the books in the ILP, provided the offending passages had been deleted. (One of the most famous books listed in that Index was Copernicus’s De revolutionibus in which, amazingly, the heliocentric theory as such was not ‘expurgated’, but only those passages that openly contradicted the biblical account of cosmology.) The word Index in the title of these two works is of course Latin, and thus has no direct connection with English usage, but they are so well known and have had such considerable influence that most dictionaries and encyclopaedias list and explain the term together with its other senses.

Music

Here we encounter another obsolete use of the word, index, namely for a sign similar in appearance to a handwritten lower-case w which was used at the end of a stave to direct a player to the first note on the next stave (1597); it was therefore also called a direct (a by now equally obsolete noun).

Mathematics

In this field, an index or index number is a numeral or symbol written above or below, to the left or right of another numeral or symbol to indicate its position or an operation to be performed on a number or entity (1674). Thus, a23 means an element in the second row and third column of a matrix, and 3√5 is shorthand for ‘cubic root of 5’. Powers of a number are expressed by an integral index, e.g. x2, roots by a fractional index, e.g. x½, and reciprocals of a power by a negative index, e.g.

\[ x^\frac{1}{x^2} \]

and there are other specifically named mathematical indices (here, as mentioned earlier, the Latin plural is still being used). There is also the index set, which is the set whose elements are used to indicate the order of elements of a series, e.g. a1, a2, a3 . . . an, where 1, 2, 3 . . . n are the members of the index set.

Printing

The sign of a hand LjF, formerly quite widely used, especially in advertising, is first mentioned in 1727 as an index but may of course be considerably older.

Scientific uses

It seems that index, either alone or in combination with other terms, found its way into scientific terminology towards the end of the 18th century, when increasing specialization and more exact measurements became the hallmark of modern science which developed from the general pursuit of ‘natural philosophy’. Again in the chronological sequence indicated by the earliest quotations, we encounter the index glass or index mirror (1773) as a part of astronomical and surveying instruments, the index of refraction in optics (1829), the cephalic index in anthropometry (1866), index maps in cartography (1869), index fossils in palaeontology (1900), index forests (1905) which are those that reach the highest density in a given locality, index and index register in computer science (1952), and index horizons in geology (1956); in addition, there are index species in biology and index percent (the increase in value of a tree or forest as an annual percentage of its present value), these terms being provided by Webster without indication of earliest use, but presumably sometime in the first half of this century.

Industry

The uses made of index and indexing in different branches of manufacturing are varied and not always obvious so far as their meaning is concerned. Thus, in the textile industry we find an index machine (1850) which was a kind of Jacquard loom, followed in mechanical engineering by a whole host of index arms, bars, centers, circles, cranks, heads, pins, plates, spindles, and tables (1863-1950), most of which are used in the exact machining of parts that are being moved a certain distance between each operation, e.g. in the cutting of gear teeth. It is not quite clear what all this has to do with the basic meaning of ‘showing’ or ‘pointing out’ other than that perhaps the exact position of the piece to be machined is being pointed out, as it were, to the cutting tool, so that it will perform its work in the predetermined place. At any rate, the word is now widely used in mechanical engineering and tool making in a sense rather far removed from what the layman (and the book indexer!) would readily understand.

Since indexers of books mostly use cards (unless they have switched to microcomputers and word processors) it is only natural that the paper industry providing them with index cards uses the term index board (1937), also known as Bristol board, for the special sort of paper used to manufacture them. But, as we shall see, the same term had been used more than a hundred years earlier for a completely different purpose.

Economics

Rather surprisingly, the use of index and indexing in the sphere of economics seems to have escaped the notice of the OED lexicographers toiling under the stern direction of James A. H. Murray, although the words had by then long been in use in the senses only too well known to everybody today. Perhaps Frederick J. Furnivall and other members of the Early English Text Society who provided most of the original material for the com-
pilation of the OED did not care too much for the writings of those engaged in the 'dismal science' during a period which for them was the contemporary scene, namely the last three decades of the 19th century (and Adam Smith apparently had not yet used the word). Only the supplement to the OED revealed that the word had been used as early as 1875 to indicate variations in prices or values compared to a certain base period, from which later developed such things as the cost-of-living index, the Dow-Jones index of stocks in the US, and the indexing of wages, pensions, and taxes.

Public administration

An early and exclusively American use of index board (1830), recorded in the DAE, was as a term for street signs, but it seems that at the end of the 19th century it had gone out of fashion. The most recent combination of index with another word, and one probably limited to the UK, is index number and index plate (1973) used instead of the more usual license number or plate of automobiles, motor cycles and other motor vehicles. This, too, is ambiguous since there are, as we have seen, also index plates in mechanical engineering, and index numbers in mathematics, both with completely different meanings. One would hope that this idiosyncratic and quite superfluous usage (apparently invented by journalists, because the cited source is a daily newspaper) will not spread beyond the boundaries of that part of the world in which cars are driven on the left side of the road.

Derivations

All dictionaries treat the word index first in its capacity as a noun, although, as we have seen, it is itself derived from a verb. However, the verb to index is, at least in English as well as in a number of other languages, of more recent origin than the noun. The OED lists its first use in the sense 'to furnish (a book etc.) with an index' in 1720, and 'to enter (a word, name, etc.) in an index' in 1761. Ironically, the most basic sense of the verb, namely 'to point out, to indicate', does not seem to appear in the literature before 1788, i.e. about half a century after its earliest use for listing purposes.

Needless to say, other derivations can easily be formed from the root index, such as indexical (1828), indexer (1856), indexed (1872), indexing (1887), indexible (or -able, take your choice, but OED seems to prefer -ible) (1951), indexation (1960), and, sad to say, indexless (which still too many books are, as witness the standing feature on this phenomenon in our journal) first deployed by Carlyle, who coined the word in 1858.

All other senses of the noun have also been conferred on the verb, including the putting of a book on the ILP, and the rotating of a piece of material that is to be machined through a certain part of a complete turn. Related to this is the indexing of microfilms, i.e. the various methods used to identify a certain frame for retrieval, especially in motorized microfilm readers.

Relationships to other concepts and their terms

Both the noun and the verb index are related to other words expressing cognate concepts, most of which have already been dealt with above under the various usages. The source for these and other relationships is of course Roget's thesaurus. In one of its latest editions10 the word index is shown to be related to the following, here given in the serial order in which they appear in that work: to relate (make a reference to, refer to, allude to, mention); to class (list, file, tabulate, alphabetize); numerical element (exponent, logarithm); list; finger; gauge; indicator; record (n: file, waiting list, card, microform; v: docket, file, catalogue, archival store); edition (appendix, supplement), e.g. there may be an edition of a book with and without an index.

Odds and ends

Inevitably the word index has been linked to other words in facetious, derogatory, and otherwise unclassifiable ways. The OED lists index-hunting (1699), followed by an index-hunter (Smollett, 1751), index-learning (Pope, 1728) and index-rakers (1876), none of which are complimentary. Then there are index pips (1899) which are the miniature indications of the denomination and value of playing cards printed in the corners. This, and the outstretched index finger are the only illustrations of index in Webster.

Finally, if you as a reader or indexer discover an error in the index of a book or journal, do not lightly call it an index error: you might mislead a scientist who uses the same term for the error in the reading of an instrument whose scales are not carefully enough calibrated in relation to each other, thus resulting in erroneous measurements. In both cases, though, errare humanum est, which brings us right back to the Latin roots of index.