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Card-image public access catalogues (CIPACs): An international survey

KEYWORDS

Online catalogues, Digitized catalogue cards, Scanned card catalogues, Card-image public access catalogues, CIPACs

ABSTRACT

This paper surveys card-image public access catalogues (CIPACs) – online library catalogues based on databases of digitized catalogue cards and more or less sophisticated mechanisms for browsing or searching. Solutions of this kind have been implemented by a number of libraries in various countries since the mid-1990s, mainly as inexpensive alternatives to a full retrospective conversion of their old catalogues. The article presents a web-page dedicated to CIPACs, identifies and describes four main categories of interface software for such catalogues, and provides a comparative overview of fifty CIPACs in eleven countries, looking at aspects such as geographical distribution, growth and size, software, number of catalogues, processing and index creation, navigation, image formats, and other features.

1. Background

Since the introduction of automated library systems and of online public access catalogues in particular, one of the greatest challenges for library managers has been the transfer of older records into the OPACs. Some libraries have already achieved this goal, but many others are still far away from closing their old card, sheaf or book catalogues. In the mid-1990s it was estimated that in the UK approximately 50 million records (28 million in higher education libraries) were still remaining to be converted (Bryant, Chapman & Naylor, 1995; Bryant, 1997), and 52 million records of titles published after 1945 in Germany (Beyersdorff, 1993).

Recataloguing is expensive and therefore normally not feasible on a large scale (Dugall, 2001). However, the conversion of *existing records* into machine readable records (*retroconversion*) is not cheap either. Studies of large conversion projects using combinations of various options and techniques have shown that on average the cost per record is between 2.42 and 4.23 Euros (Beyersdorff, 1993; Bryant, 1997; Leeves, Butler & Mealia, 1999), which means that for larger projects or national programmes enormous sums of money are required (UK: 130–160 million Euros, Germany: approx. 185 million).

2. What are card-image online catalogues?

The *digitization* (scanning) of catalogue cards has become common practice in retroconversion – not only as a prerequisite for approaches that involve optical character recognition (OCR), but also when a digital duplicate of the catalogue is needed to support conversion work on a computer screen. As the scanning step can be done quickly and at reasonable cost, the idea emerged to apply suitable browsing software to the collection of card-images. This would make it possible to offer an auxiliary or provisional online catalogue – not as sophisticated as a "real" OPAC but, anyway, a very attractively priced alternative. Although the cost figures for such solutions that can be found in the literature are somewhat inconsistent it seems that for an average system of this kind the cost per card is only about 0.11 Euros.¹ The first known example of such a *card-image* OPAC was established at the Princeton University Library in 1994 (Henthorne, 1995). From the mid-1990s on, similar catalogues started to appear in Europe, with some variation of the component for navigation but always displaying the digital image of a catalogue card as the full view of a retrieved record (Figure 1). Some of these catalogues were originally offered on in-house networks, but soon the WWW became the commonly used platform.

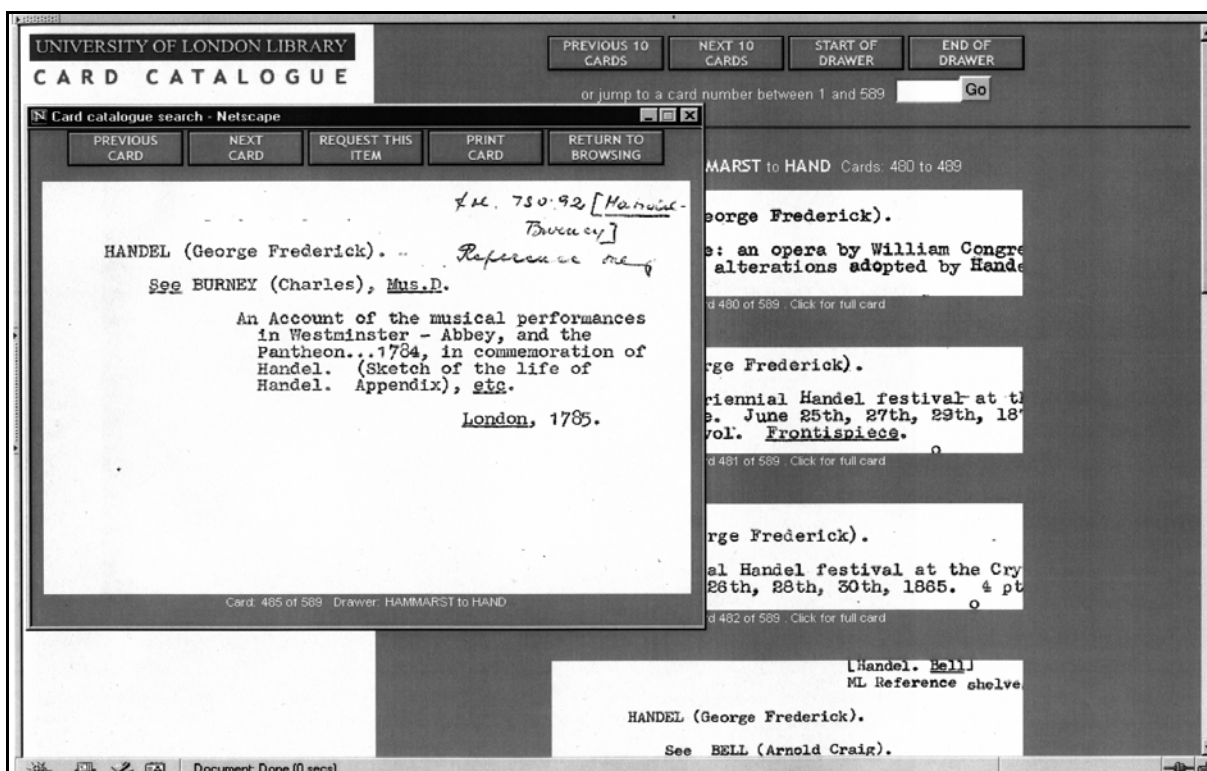


Figure 1: A typical record display in a card-image catalogue (University of London Library)

In addition to low cost and speed of creation, the advantages of such electronic card-catalogues are retrieval speed, saving of users' time (by searching from home), independence

from opening hours, multi-dimensional search options (if the headings or entries are offered as searchable text), printing out and/or downloading of records, online book ordering (appropriate components can be attached to the display of card-images), and the saving of library space (making it possible to remove the card cabinets). However, from a critical point-of-view one could also argue that in most cases no options for retrieval are offered that exceed those of traditional card catalogues, that the users might be frustrated by such solutions, and that modern information technology is used (or abused) for the resurrection and perpetuation of an outdated medium (catalogue cards).

So far, no standard terminology has been established for catalogues of this kind. Often they are referred to as "electronic", "scanned" or "digitized" card catalogues, or simply as "image catalogues" (mainly in the German-speaking countries). Here, not only the terms *card-image catalogues* and *card-image OPACs* will be used, but also – as an analogy to the widely-used term *OPACs* – the newly proposed acronym *CIPACs*.² CIPACs can thus be defined as online library catalogues that are based on databases of digitized catalogue cards and more or less sophisticated mechanisms for browsing or searching.

3. Purpose and approach

The intention of this study is to draw an overall picture of the present CIPAC "scene". Therefore, it aims at identifying the CIPACs that have been set up so far in various countries and contexts, their retrieval capabilities and potential, and some of the issues interconnected with their creation. In order to achieve this goal the following methodological steps were required:

- various and repeated attempts were made to identify all institutions that operate CIPACs (50 libraries by 02/2002), and a web-page was created to document the findings of this search;
- literature (articles, reports, and other documents) on the individual CIPAC projects was searched, collected and scrutinized for relevant facts and figures;
- a questionnaire was sent out to 38 institutions identified by mid-2001, in order to obtain details on the various CIPACs (23 libraries responded, some of them also sent additional documents);
- the web-pages of all institutions identified were repeatedly checked for information on their CIPACs
- all CIPACs were searched and examined with regard to software, main features, help texts, etc.

The information obtained was recorded in two ways: First, a structured inventory of CIPACs was established, based on categories such as country, location, year of implementation, URL, contact, type of catalogues, technical information (number of cards, image format, manual input, OCR processing, software), navigation/retrieval, online ordering, online help, and sources. This inventory, together with additional information, was then used for creating a matrix which provides a comparative overview of CIPACs on which the account in section 6 is based.³

4. The international CIPAC web-page

The author's endeavours to systematically record all known CIPACs date back to 1999 and in early 2000 led to the first version of a web-page which listed some 20 CIPACs. Additions to this list have been made continuously since. Information on existing and new CIPACs was obtained from a variety of sources, such as the relevant literature, word passed on by fellow librarians, the above-mentioned questionnaire, repeated checks of the web-pages of relevant software providers, from respondents participating in a CIPAC user survey (Oberhauser, 2001; 2002), and by regularly searching the WWW using engines such as *Google*.

In the last two years, this web-page – now established as *The International CIPAC List* and hosted by the Vienna University of Technology Library⁴ – has grown to a list of fifty CIPACs in eleven countries (02/2002). The list is arranged geographically by countries and (English) place names, and gives both the (English) names of the individual institutions and the web-addresses of their CIPACs (http-links). Already, links to this list can be found on LIS-related web-pages in various countries such as Germany, the United States and Australia.

5. Major CIPAC software solutions

5.1 CIPACs based on binary searching

CIPACs based on the principle of *binary searching* feature a browsing algorithm where the user makes a number of decisions which reduce the set of documents step-by-step until there are just a few left that can be viewed easily in sequential order. The best known software of this kind is *KatZoom*, which was developed at the Austrian National Library (Dikovich & Wilhelm, 1997); the software was required to be cheap (no manual/intellectual input for indexes), simple, and suitable for offering the catalogue via WWW. *KatZoom* makes use of a "division factor" that splits the total set of documents into n parts, the subset selected by the user again into n parts, and so forth, until the resulting subset is less/equal 2^n . This means

that by employing 4 as the division factor, a search of the library's largest card catalogue (approx. 1.69 million cards) requires eight mouseclicks until a result set of eight cards or less is reached.

KatZoom offers only the letters of the alphabet (A–Z) for the first decision to be made by the user. The resulting four subsets are visualized by cropped images of the first card of each subset, plus the last card of the last subset. The user determines the section into which he/she wishes to "zoom" and clicks on a button shown between the cropped images. More screens with five cropped images follow, until the last one with such short displays appears. The final screen with full images either includes the desired card or proves that the library does not hold the document looked for.

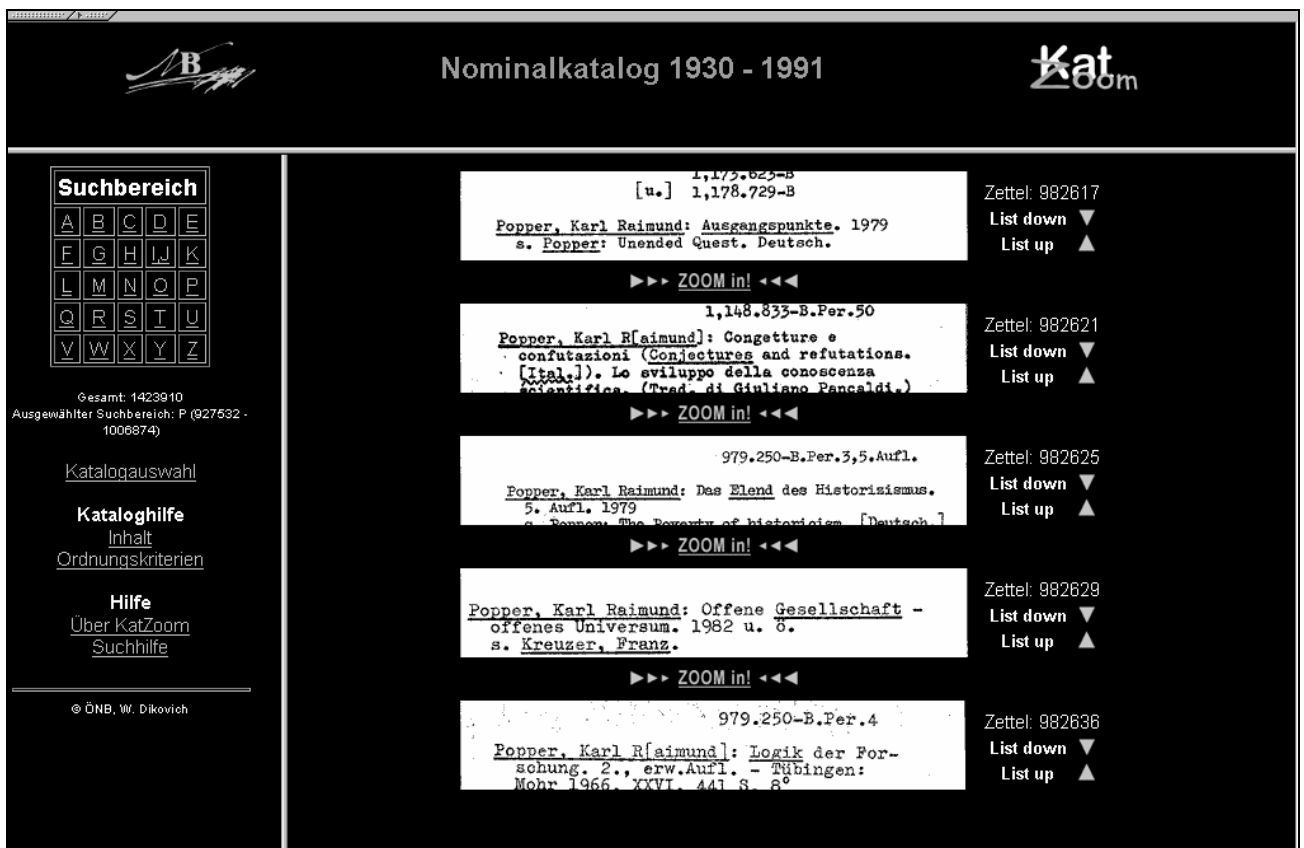


Figure 2: Last cropped view before full image display (*KatZoom*, Austrian National Library)

KatZoom has an optional functionality for ordering books from the stacks. If this feature is implemented, the user finds an "Order"-button to the right of each full card-image. When clicked, it opens a new window that shows both the card and an order form. The user needs to copy the call number from the card (manually) and enter his/her personal data and userID.

An interesting module for librarians is an editing tool that supports features such as loading new batches of card-images, deleting and/or moving individual card-images, replacing a card-image by text (for correcting call numbers etc.), and inserting newly written cards.

After the initial installation at the National Library,⁵ a number of other Austrian libraries started using the software as well. In 2001, a modified version of *KatZoom* was released that does not rely on binary searching but features index browsing as well as Boolean searching of the text of the index (which can be useful for subject headings).

5.2 CIPACs based on partial indexes

CIPACs based on the principle of a *partially indexed* catalogue need some sort of manual and/or intellectual input as a prerequisite to their creation. A partial index can be made of existing or newly produced leader cards, or simply by indexing every nth card by keying in the headings (author/title headings, subject headings). Typical examples for the latter are indexes based on the headings of every 20th, 50th, 100th or 200th card. The best known software of this kind is *Chopin*[®], a system developed by a German software firm and marketed by a service bureau for scanning, OCR and microfilming based in Berlin. On the WWW it first became visible in 1997 when the Berlin Central and Regional Library made its card-image catalogue available over the Internet (Rönsch, 1998). Today, *Chopin* is the CIPAC software with the largest installation base, including some of the largest CIPAC sites (Halle, Kiel, Hamburg, Berlin).⁶

On the first screen of a typical *Chopin* CIPAC the user finds a search box where he/she can enter a term, e.g. the surname of the author or the first letters of that name. This input is used by the system for locating the section of the index that represents – in an alphabetical sense – the term. It may well be that the term typed by the user actually appears as one of the index entries shown, particularly if the catalogue represents many works of a specific author and many cards were indexed (e.g. every 20th card). In any case, the system highlights the index entry which makes the closest match for the user's input, and also offers to browse the index up or down.

If the index is based upon leader cards, the user can safely click on the highlighted entry for a full view. Caution is required if the index is based on every nth card, because in this case a given index entry not necessarily represent the first card containing this heading, so that the user needs to click on the preceding entry to be on the safe side. In full view one may browse forward/backward card by card, or to "jump" 5, 20, or 100 cards forward/backward, in order

to find the desired work or to make sure that the library does not hold a copy (the setting for jumping differs from catalogue to catalogue).



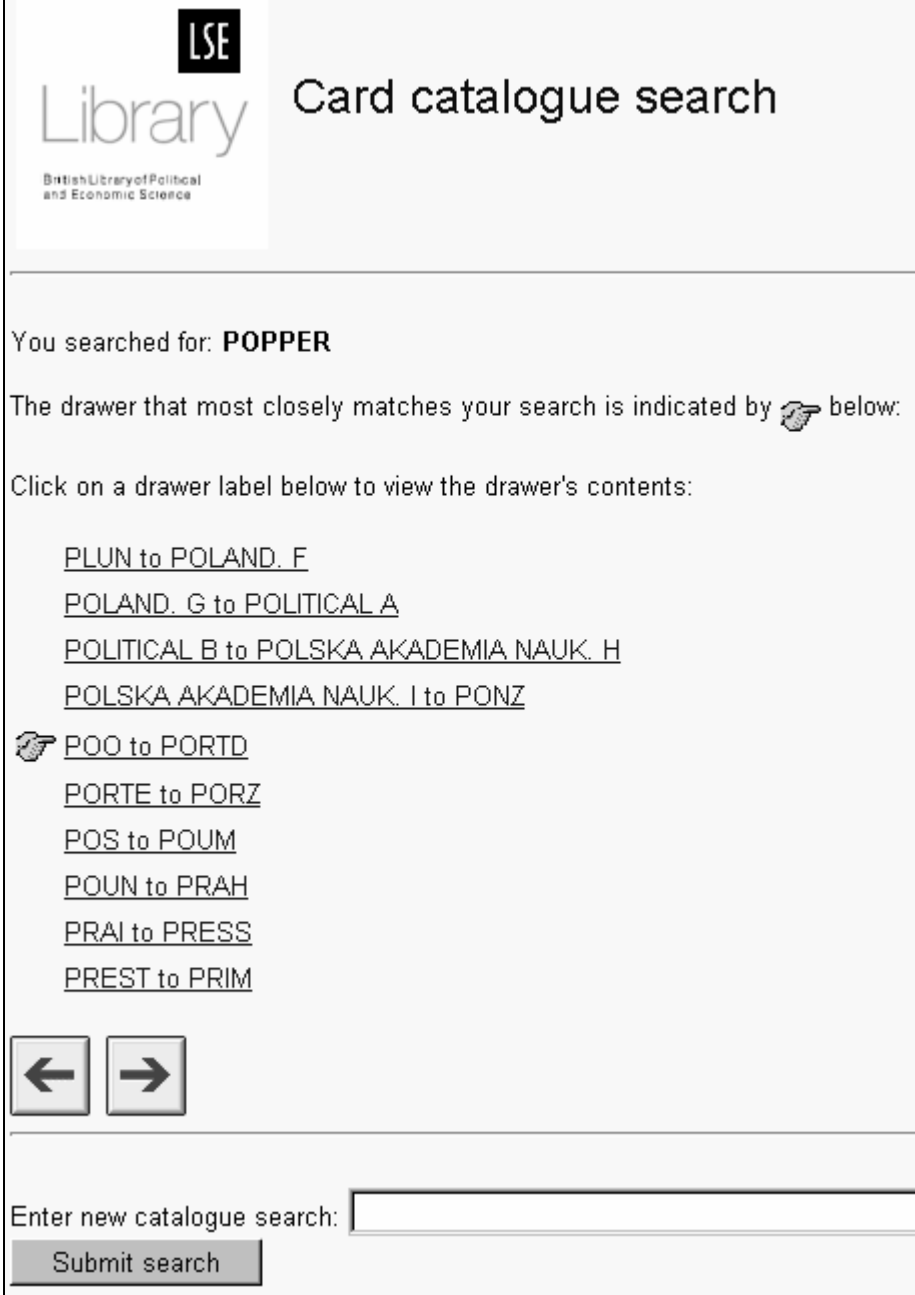
Figure 3: Display of a partial index (*Chopin*, Leipzig University Library)

Chopin makes use of a Java applet for the visualization of TIFF-images in the user's web browser. This applet also permits setting the size of the image, zooming in/out, changing the resolution, the brightness and the contrast, rotating the picture, inverting the colours, printing the card-image and downloading it to the user's local workstation. Some earlier versions of *Chopin* which are still in use have a somewhat simpler interface for displaying GIF-images.

If implemented, the full display of every card-image includes an "order"-button which opens an order form in a new browser window. The user only needs to enter his/her personal data and (optionally) to select the desired collection point from a list. It is not necessary to copy the call number to this form as the order slip that is printed out in the library includes the image of the catalogue card.

Other features of *Chopin* include Boolean searching of the terms in the browse index (mainly for subject headings), and interfaces specially designed for classified catalogues (navigation in up to ten levels of the classification's tree structure) as well as for book catalogues.

5.3 CIPACs based on virtual drawers





The screenshot shows the LSE Library website interface for a card catalogue search. At the top left is the LSE Library logo, with the text "British Library of Political and Economic Science". To the right of the logo is the title "Card catalogue search". Below the header, the search results are displayed. It states "You searched for: **POPPER**". Below this, it says "The drawer that most closely matches your search is indicated by  below:". Then, it instructs the user to "Click on a drawer label below to view the drawer's contents:". A list of drawers is shown, each with a label: PLUN to POLAND. F, POLAND. G to POLITICAL A, POLITICAL B to POLSKA AKADEMIA NAUK. H, POLSKA AKADEMIA NAUK. I to PONZ,  POO to PORTD, PORTE to PORZ, POS to POUM, POUN to PRAH, PRAI to PRESS, and PREST to PRIM. Below the list are two navigation buttons: a left arrow and a right arrow. At the bottom, there is a search input field with the text "Enter new catalogue search:" and a "Submit search" button.

Figure 4: A virtual drawer index (London School of Economics)

CIPACs based on the headings of *virtual drawers* are a variation of partial index systems. They also feature a partial index but one that is made of the labels on the original catalogue drawers (and racks). The indexes of such systems are normally much smaller and less specific than they would be if every n^{th} card was indexed (a drawer may hold 1,000 cards or even more), but more specific than just the letters A–Z as used by *KatZoom*. Furthermore, drawer labels are usually *inclusive* as they indicate both the beginning and the end of the sequence of cards (e.g. "Pooler to Porre", "Porri to Poste", "Postg to Pov", and so forth). Whereas a typical partial headings index only shows every n^{th} card (so that novice users might believe that the author looked for is not in the catalogue), a virtual drawer index suggests completeness, just as the card cabinets and drawers previously did.

In the virtual drawer category there is no leading software product; most programs are home-made solutions of individual libraries and not shared with other institutions. One that is actually used by two libraries is the system created by the British Library of Political & Economic Science at the London School of Economics⁷ (Price, 2000); it is also used by the University of London Library.⁸ This system starts with a search box; when the user enters a term the software displays a list of the matching section of drawer labels, highlighting the one to look in for the search term. The user may scroll the index up or down, or click on one of the virtual drawer labels. On the selection of the desired drawer, the system displays the first ten cards of this drawer as cropped images. Now the user can either browse through the drawer by viewing ten cards at a time, or jump to a specific card by entering its number (the total number of cards in this drawer is also shown). Finally, when those ten cards have been found that include the work the user was looking for, a full display can be seen by clicking on the respective short view. This system also has an optional module for placing online book orders.

Whilst several more or less similar systems can be found in a number of other European libraries, a unique variation that combines drawer labels with binary searching was developed by the Moravian Library (Czech Republic). This CIPAC⁹ shows the cropped images of every 100th card in the drawer, i.e. cards no. 1, 101, 201, etc. The user selects one of these batches and now gets cropped images of every 10th card, e.g. 201, 211, 221, ... , 291. After another click the full images of ten cards are displayed.

5.4 CIPACs based on OCR processed text

Although CIPACs based on the searching of *OCR processed text* were among the first implemented card-image online catalogues, they have remained the exception rather than the rule. The Swiss system, *BerninaSpider* (formerly *EuroSpider*), goes back to the first half of

the 1990s when a team at the Zurich Federal Institute of Technology started experimenting with probabilistic indexing and retrieval of texts derived from the scanned images of catalogue cards by optical character recognition (OCR). They found that even if the texts were rather short and very noisy (33% recognition errors), a term weighting approach based on a probabilistic model of search term occurrences – taking OCR errors into account – would lead to very good retrieval results (Mittendorf, Schäuble & Sheridan, 1995). In contrast to other CIPACs this system makes it possible to search not only the *headings* but also the *full text* of the cards. In spite of its probabilistic full-text retrieval features, *BerninaSpider* is still a card-image OPAC system – what the user is shown is the digitized image of the catalogue card and not the result of the OCR conversion (this remains invisible).

The system offers two search boxes – one for terms from the catalogue card headings, and a second one for terms from the full texts of the cards. The version used at the Zurich Central Library¹⁰ had – until recently – an additional option as it performed simultaneously a free-text search of the Swiss Union Catalogue (a "normal" Aleph 500 OPAC system). The reaction of the system is quite impressive. In many cases it manages to locate the correct card straight away, with only one single mouseclick applied. The obvious drawback is that it is relatively slow. Even so, the time needed for a search is about the same as on the other systems where the user needs to make several decisions/mouseclicks. Finally, the image of the card identified by the system as most relevant appears in the right frame. The headings of the neighbouring cards are also displayed and the user can browse backward or forward at will. *BerninaSpider* has also an optional component for ordering the retrieved documents online.

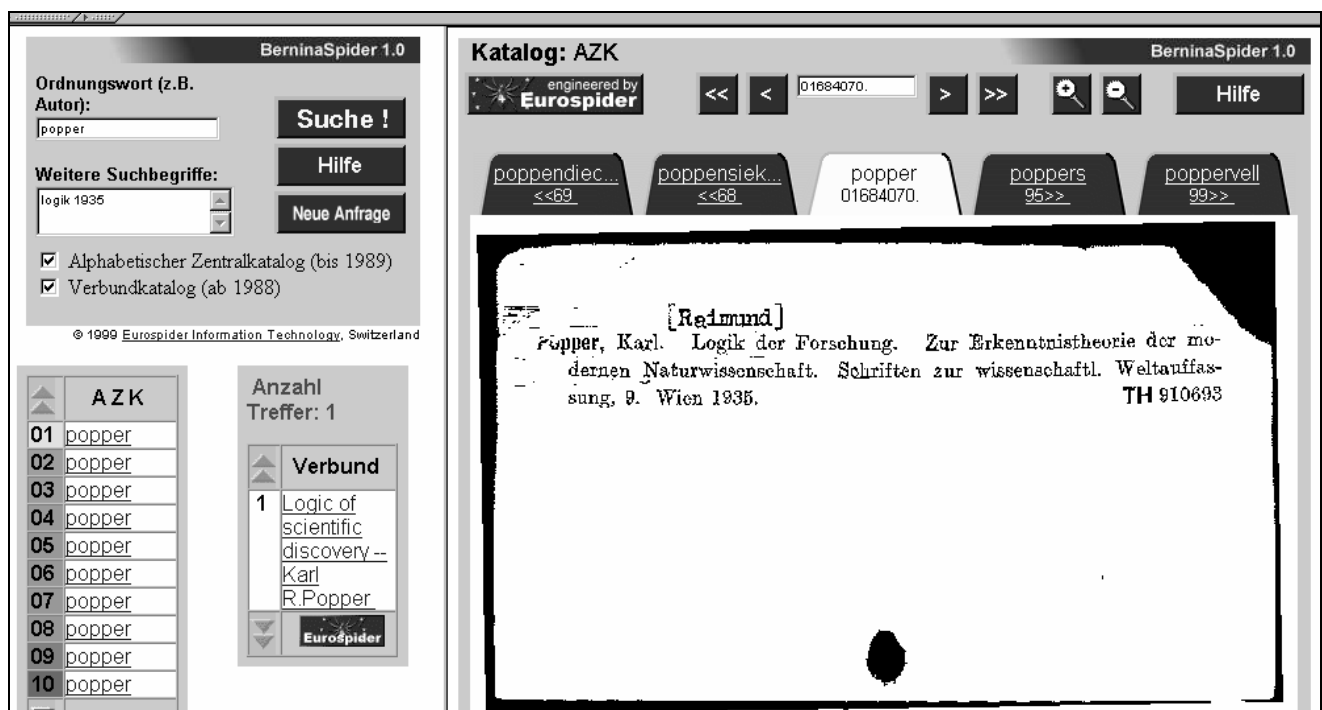


Figure 5: Good retrieval results in spite of OCR errors (*BerninaSpider*, Zurich Central Library)

Recently, two other systems based on OCR processed text were released. One of them, a newly developed add-on for the existing CIPAC of the Heidelberg University Library,¹¹ is based on an algorithm similar to that used by *BerninaSpider* but claims to be simpler and faster (Pietzsch, 2001). The second one was developed for the conversion of the Hesse Union Catalogue, *HeBIS-Retro*.¹² This system was created by means of a number of sophisticated techniques for the recognition of the structures of the catalogue cards and – after rigorous quality control – the transformation of these structural elements into HTML-coded categories suitable for online retrieval (Dugall, 2001).

6. A comparative overview of CIPACs

This section illustrates the present CIPAC "scene" by comparing the fifty card-image online catalogues identified by February 2002. Although every attempt was made to fill every cell of the data matrix mentioned above, this has not been possible in *all* cases. For this reason, the figures presented below are sometimes based on less than 50 CIPACs; the number of cases is always given as N.

6.1 Geographical distribution

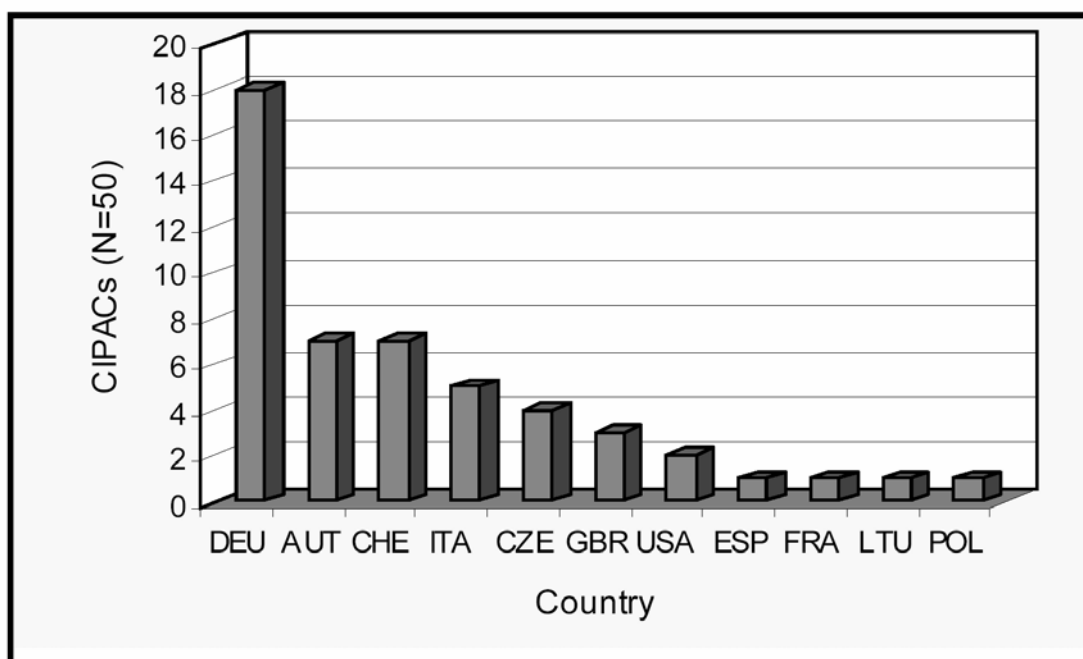


Figure 6: Geographical distribution of CIPACs

Concerning the geographical distribution of CIPACs (Figure 6), Germany lies far ahead, followed by two smaller countries (Austria, Switzerland). Although CIPACs have been implemented in a number of other countries, it can be claimed that they are predominantly a phenomenon of the German-speaking world.

- In **Germany** the *Chopin* system plays an important role, but several other software solutions are used as well. The earliest implementer was the Berlin Central and Regional Library (1996).
- In **Austria**, the *National Library* has played the leading role in CIPAC development and implementation. In fact, all but one of the Austrian CIPACs are based upon its *KatZoom* software package, presumably because it was made available to them at low cost.
- **Switzerland**: Only four of the seven CIPACs identified are *BerninaSpider* systems. Two libraries opted for the German *Chopin* system, and recently the Swiss National Library employed yet another system for the conversion of its classified catalogues.
- **Italy**: Some of this country's CIPACs are still experimental (Lunati, 2001); for example, the Florence Central National Library's project – to name the most prominent institution – is only a demo version.¹³
- **Czech Republic**: CIPACs have been identified in four libraries. In terms of software and technology used, they are all different; there are both commercial and home-made solutions. However, all four user interfaces are based on the "virtual drawer" approach.
- **United Kingdom**: Only recently, two major academic libraries adopted the technique on a larger scale (see 5.3 above).
- **United States**: Most probably, the Princeton University Library was the first library in the world to implement a card-image public access catalogue on a large scale. Although the project was a successful one, there has been remarkable little resonance in the USA. To the author's knowledge, only one other US library has employed the technique.¹⁴ On the other hand, the Princeton project definitely influenced the development of CIPACs in Europe to a great extent.

6.2 Growth and size

The growth of CIPAC implementations since the mid-1990s is depicted in Figure 7 that shows the cumulative number of CIPAC sites by year of implementation (of the first card-image catalogue per site). The curve illustrates that, after a cautious start, the take-off began only in 1999; more than two thirds of all CIPACs have been installed since.

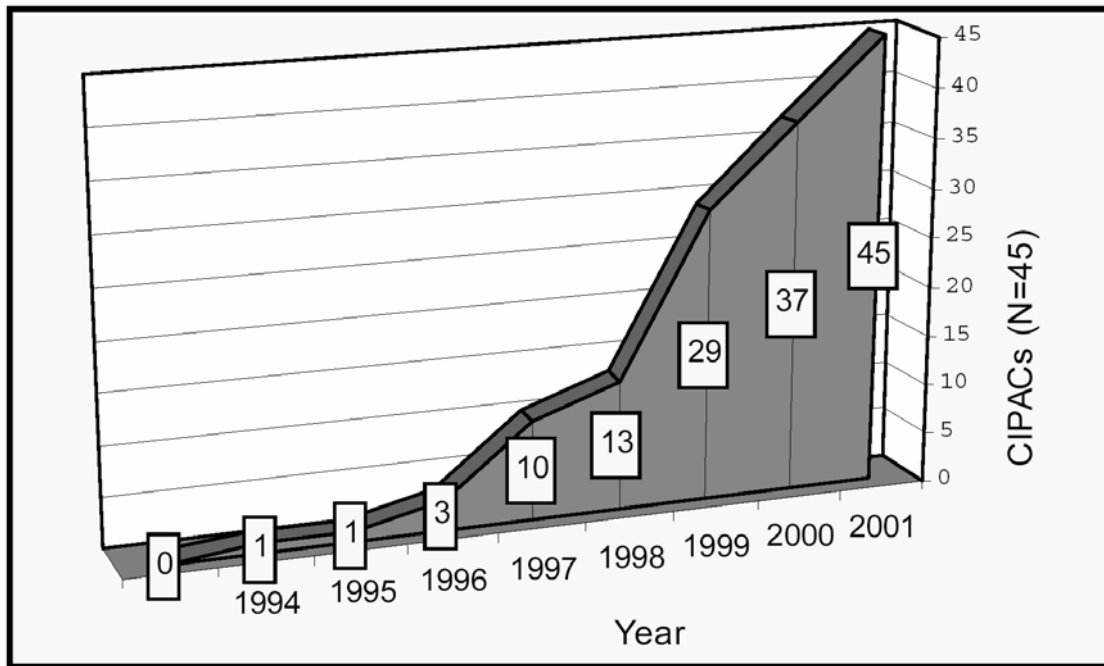


Figure 7: Growth of CIPAC implementations, 1994–2001

Although it may not be justified to draw a trend line based on these data, one is inclined to hypothesize a further increase of the number of CIPACs in the next few years – not only because some software manufacturers are advertising their products heavily. Studies with a nation-wide focus such as one recently published in Italy (Lunati, 2001) have started recommending the technique as an appropriate measure for bringing greater numbers of bibliographic records onto the Internet. It also seems that among (academic) libraries the urge is growing to have records of *all* their holdings on the WWW.

<i>Country</i>	<i>Location</i>	<i>Institution</i>	<i>Cards</i>
Germany	Frankfurt	HeBIS-Retro Union Catalogue	7,750,000
USA	Princeton	University Library	6,000,000
Czech Republic	Prague	National Library	4,479,000
Germany	Halle	University and State Library	4,020,000
Austria	Vienna	University Library	3,928,000
Austria	Vienna	National Library	3,543,000
Germany	Kiel	Inst of World Economics	3,479,000
Germany	Hamburg	Inst of International Economics	2,855,000
Czech Republic	Brno	Moravian Library	2,689,000
Lithuania	Vilnius	National Library	2,500,000
Germany	Berlin	Central and Regional Library	2,400,000
Switzerland	Zurich	Central Library	2,200,000
Germany	Munich	State Library	2,127,000

Table I: The largest CIPAC sites (2m+ cards)

Table I lists the largest CIPAC sites, i.e. those where more than two million catalogue cards are available online. Of these 13 sites, 9 are based in German-speaking countries. The largest single card-image catalogue is offered by the University of Princeton Library (HeBIS-Retro comprises several databases). At the present time (02/2002), a total of approximately 75 million card-images is held online.

For the purpose of analysis the 46 CIPAC sites for which data are available were grouped into seven size categories according to the number of card-images held online. The largest category is "over 1 million" (and under 2m) card-images which applies in about one fourth of all cases. About half of the CIPAC sites are holding one million or more card-images online. On the other hand, only four institutions are dealing with just up to 100,000 images which possibly can be regarded, by and large, as the "lower limit" for sensibly implementing a CIPAC.

6.3 Software used for CIPACs

Figure 8 gives a picture of the software presently used for CIPACs which can be described as rather scattered. Both commercial (c) and non-commercial (n/c) systems are used for CIPACs, and although it seems that the German commercial product, *Chopin*, has a somewhat dominating position, there is a large number of other (presumably) commercial software solutions as well. The same is true, just on a slightly smaller scale, for non-commercial or in-house solutions.

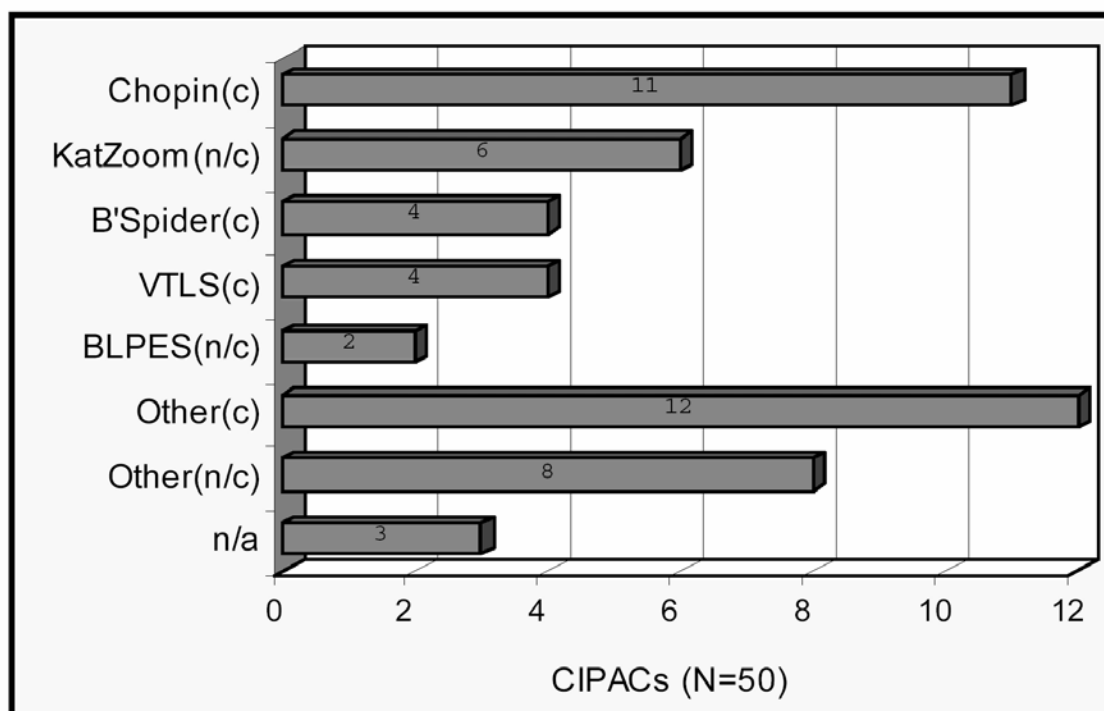


Figure 8: Software used for CIPACs

6.4 Number of catalogues

Most CIPAC sites offer only a very small number of card-image catalogues; in 50 percent of all cases this number is one or two. On the other hand, there are only a few institutions that use the CIPAC approach for a large number of (mostly smaller) catalogues.

All but four CIPAC sites offer one or more author/title catalogue(s).¹⁵ Subject catalogues and classified catalogues have been converted into CIPACs only in 19 and 9 cases, respectively (with almost no overlap). This probably reflects the actual catalogue situation in the libraries concerned, but might also be seen as an indication of the lower status traditionally given by libraries to subject searching.

6.5 Processing and index creation

Optical character recognition has not played a major role in CIPAC creation yet, as only in 8 of 50 cases this technique was applied (Figure 9). On the other hand, most CIPACs are using (manually created) indexes for browsing, mainly based on headings and/or leader cards, and not so often on drawer labels. Other indexes (classification tables etc.) were also created in some cases.

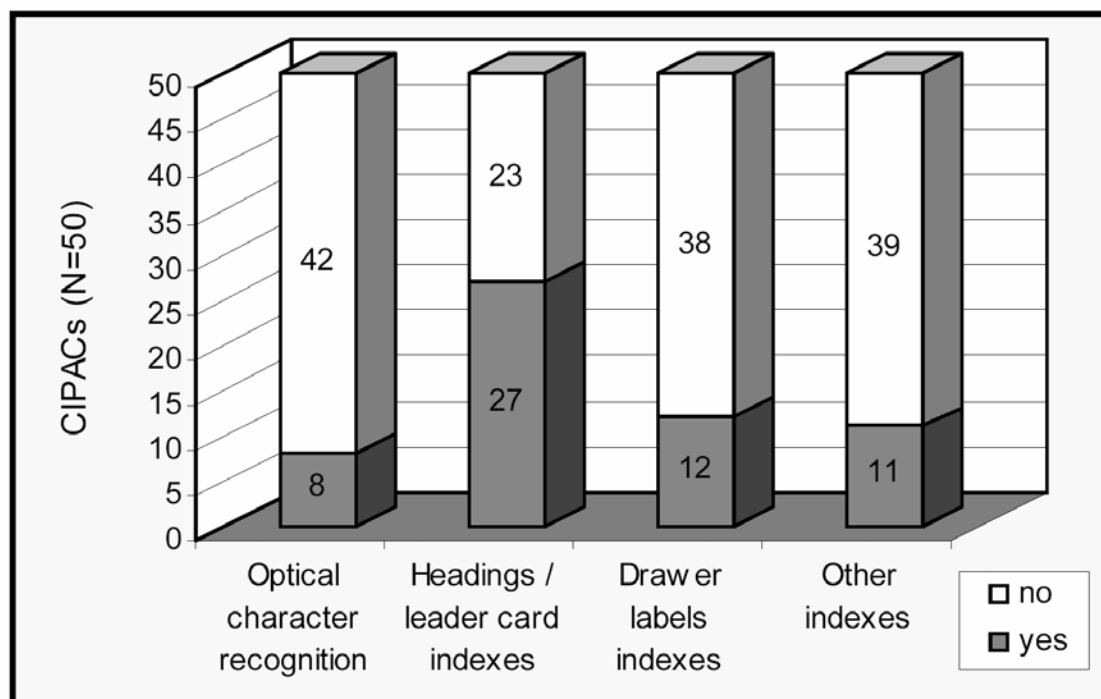


Figure 9: OCR processing and index creation

6.6 Navigation

Accordingly, browsing of (partial) indexes is the most common method of navigating in CIPACs (Figure 10). Binary searching is not so often used (mainly on *KatZoom* CIPACs), and neither is searching of fields (author, year, etc.) and/or keywords (full texts) which is restricted mostly to OCR-based systems. In a few cases, the texts of the browse indexes were made searchable by keywords ("limited" field/keyword searching).

A feature present on a rather small number of CIPACs is a component for ordering documents online. Only about one third (16) of the 50 CIPAC sites are offering such a feature. However, this does not mean that when an institution offers several catalogues as CIPACs, all of these will feature online ordering, so that the true percentage (based on catalogues rather than sites) is even smaller. As it seems justified to assume that most users approach online catalogues not only to search but also to access library holdings, this fact is somewhat surprising.

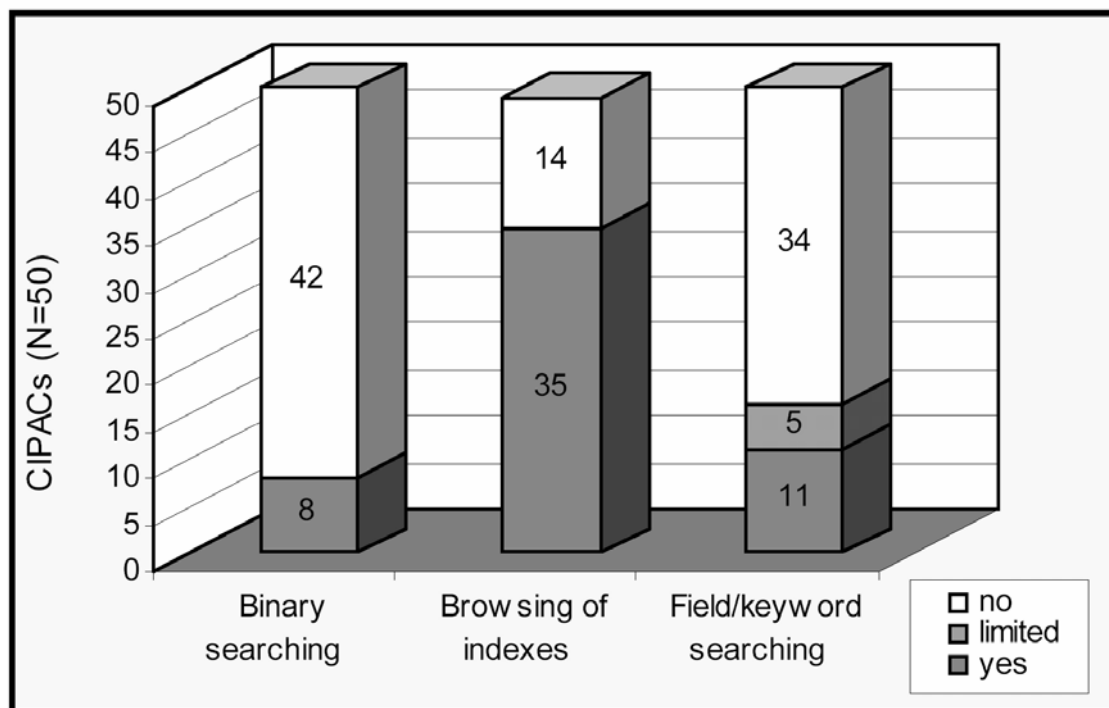


Figure 10: Features for searching of CIPACs

Likewise, printing and downloading of results (card-images) are important for many users. However, only a rather small number of CIPAC interfaces support this explicitly (printing: 12 cases, downloading: 6). This is mainly true when the software uses a Java applet or plug-in for the visualization of the card-images. Obviously, printing and/or downloading can be achieved in many other cases as well (not counted here) just by using the local browser's

functionalities. However, this depends on the individual browser used and may not be taken for granted in every case.¹⁶

Other navigational features such as displaying the search history or collecting several images in a "basket" (for printing/downloading them together), exist in solitary cases only.

6.7 Card-images

The majority of CIPACs make use of the GIF format for the display of the card-images (Figure 11). In about one third of the cases the images are shown in TIFF format by means of some Java applet or plug-in. The JPEG format is employed by only a relatively small number of CIPACs, and the (new) PNG format by hardly any of these catalogues.

Practically all CIPACs display black and white images of catalogue cards; the only CIPAC with colour images is to be found at the Uffizi Gallery Library (Florence).

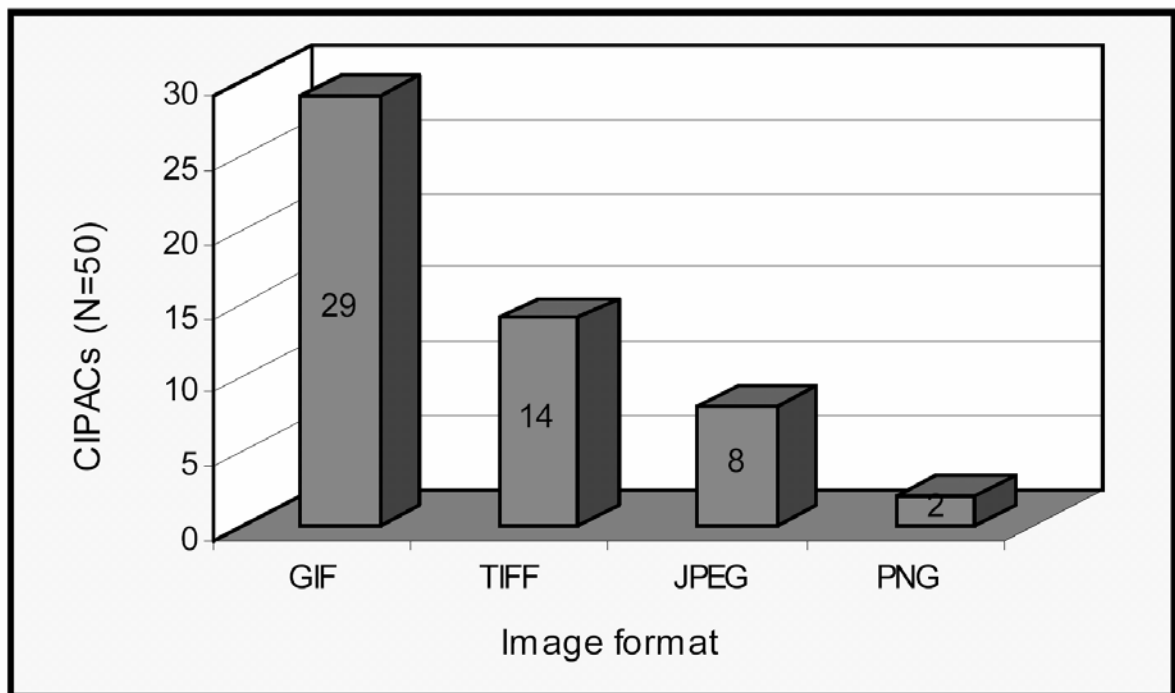


Figure 11: Image formats used

Only in a minority of cases, cropped images are used for a short display of results (Figure 12). In most CIPACs the users are shown a full image straight away. For moving to other images of the result set, techniques for jumping forward or backward are widely used (including both options such as $\pm 5/10/50$ cards and jumping directly to a particular card by entering its

number). In almost half of the cases, some sort of picture enlargement is supported, often by flexible zooming (in and out the card-image). When Java applets or plug-ins are used, other techniques for image manipulation (rotating the image, inverting the colour, etc.) are sometimes supported as well. In about a quarter of the cases, the users are offered the opportunity to change the resolution of the images in order to improve the quality of the display.

6.8 Other features

The great majority of CIPACs offer at least some sort of online help; only in 6 cases there is practically no such help at all. For the purpose of this study, the online help found on the various CIPAC web-sites was categorized (in a simplifying and obviously subjective way) into four commonly used size groups (S, M, L, XL). Most help systems fall into the small or medium categories, even if there are also several longer or maybe even lengthy varieties.

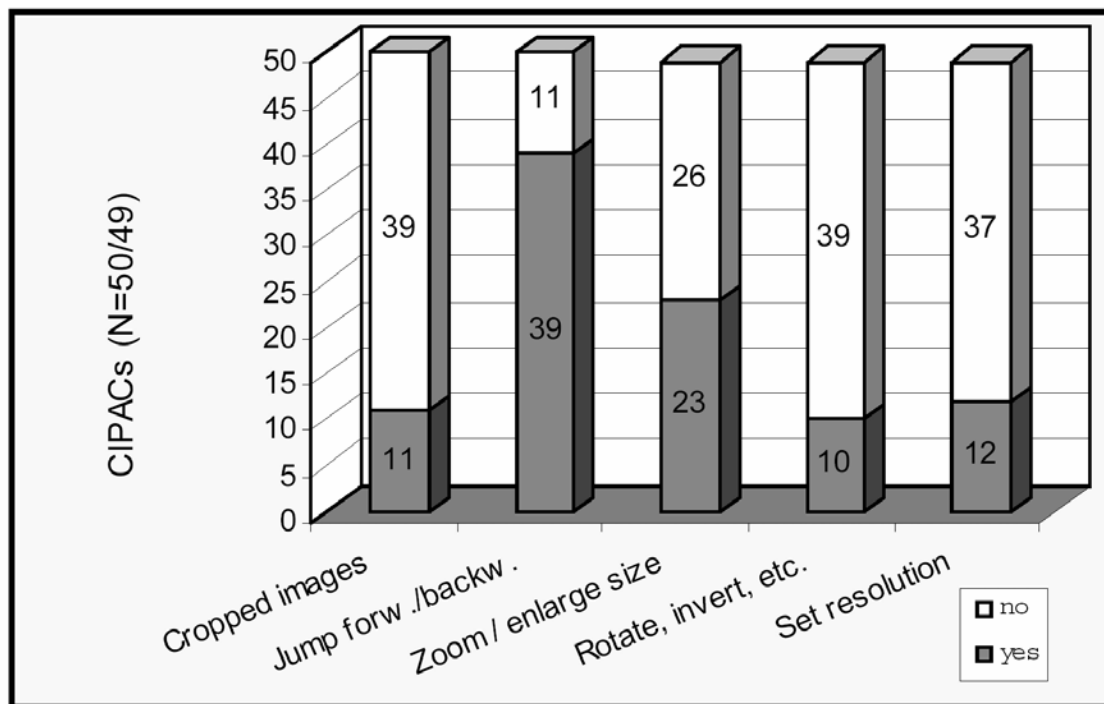


Figure 12: Features for image navigation

Figure 13 shows that the user interface of most CIPACs is in only one language which is mainly German and in some cases English or Italian. Relatively few CIPACs are in two or even in three languages.

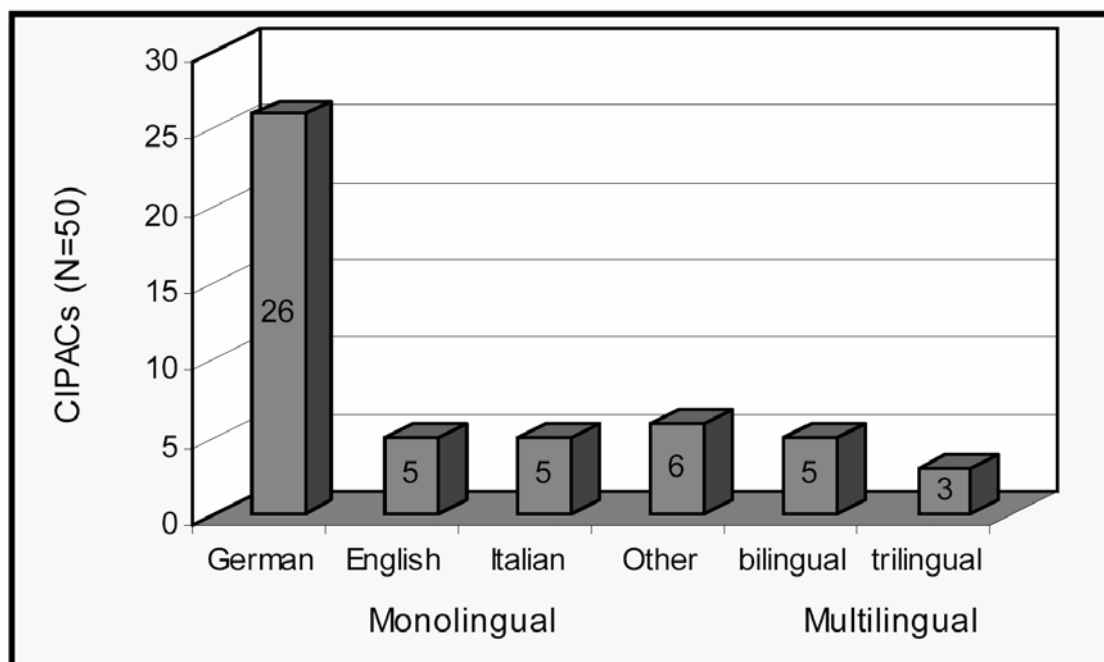


Figure 13: Language of CIPAC interface

Finally, it was also recorded whether or not the various CIPAC systems are equipped with some sort of administrative tool or editing module that makes it possible to delete individual images, to make corrections or amendments, to change the sorting sequence or even to insert new cards. However, in 29 of the 50 cases investigated no such feature was explicitly mentioned in the available sources, so that the resulting picture remains rather incomplete. Only in three cases it became evident that *no* editing tool exists, whereas many CIPACs seem to have at least some of the capabilities mentioned above.

7. Concluding remarks

The interest in CIPACs is still growing, more catalogues of this kind have been implemented and new projects continue to be undertaken. By mid-2002, the number of CIPACs identified has already risen to 57. To the author's knowledge, at the present time a number of Austrian, German and Italian libraries are considering or planning to establish one or more card-image catalogues. On the other hand, a number of existing CIPACs will disappear again. Although some libraries expect their card-image catalogues to remain for a relatively long time, many others consider them only as *interim* solutions. Two libraries even expect to complete a full conversion of their main catalogues as early as in 2003 (BLPES and Austrian National Library) so that their CIPACs may vanish again soon. In fact, the two "oldest" CIPACs of the Austrian National Library lived their short lives only from 1997 to 2000 when they were

converted again and merged into one OPAC (Zabel, 2000) . The next CIPAC to be closed might be the one at Princeton; the intention to do so was already announced in 2001 (also because of the completion of the Library's conversion project) but has not been carried out so far.

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¹ See also the author's forthcoming article (Oberhauser, 2003).

² This acronym was first proposed by Denis F. Reardon, University of Central England. Even if some of the image catalogues are electronic versions of *sheaf* and/or *book* catalogues, the majority are computerized *card* catalogues so that in this context, for convenience, "CIPAC(s)" will be used.

³ Both the inventory and the matrix are available online (http://www.ub.tuwien.ac.at/cipacs/diss/App_A.pdf)

⁴ <http://www.ub.tuwien.ac.at/cipacs/c-i.html>

⁵ <http://www.onb.ac.at/kataloge/index.htm>

⁶ The software developer maintains a web-page on *Chopin* implementations (<http://www.dilib.de>).

⁷ <http://cardcat.lse.ac.uk/>

⁸ <http://cardss.ull.ac.uk/>

⁹ <http://katalog.mzk.cz/katalog/>

¹⁰ <http://zbsearch.unizh.ch/bernina/>

¹¹ <http://www.ub.uni-heidelberg.de/Digikat/>

¹² <http://retro.hebis.de/>

¹³ <http://www.bncf.firenze.sbn.it/progetti/palatino/home.htm>

¹⁴ It may well be that among the thousands of US libraries some more are using card-image OPACs; however, no mention of this has been found in the literature or on the WWW.

¹⁵ Princeton's dictionary catalogue was counted both as author/title and as subject catalogue.

¹⁶ For example, not all browsers can print out easily a card-image that is displayed in a new window.