

Mike Sharples
School of Cognitive and Computing Sciences
University of Sussex, Falmer, Brighton BN1 9QH, UK

Thea van der Geest
Faculty of Philosophy and Social Sciences
University of Twente, PO Box 217, 7500 AE Enschede, The Netherlands

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Preface

Academics and teachers of writing are engaged in a passionate debate about the benefits of using software for writing. Does the computer inhibit creativity? Should writers use an outliner to plan their texts? Does the sight of neat laser-printed text discourage revision? Writers at work did not wait to discover the answers. They just started using computers. In her survey of 1279 professional authors, Jane Dorner (1992) found that 74% of authors already used a computer and that a further 11% were considering buying one. The authors, in general, believe that word processing makes writing more of a pleasure, saves time, and increases their output.

Recently, the computer screen has begun to absorb into a single medium the entire writing process, including gathering ideas, collecting source material, planning an outline, drafting, merging texts from different authors, reviewing drafts, revising, formatting, and disseminating the finished work. Word processors have grown into document processors. Features such as outliners, multiple windows and annotation notes are intended to support the process of planning, drafting and reviewing the text. Spelling and grammar checkers, formatting and graphic facilities, are designed to assist editing in its final form.

As document processors become integrated with other electronic resources such as electronic mail (e-mail), on-line bibliographies, picture libraries, and the entire global Internet, so they are turning into complete writing environments. One can imagine a manager developing a report in cooperation with a colleague in another part of a multinational company. The manager types an outline or draft on a word processor and then sends it by fax or e-mail for the colleague to annotate or revise. The colleague incorporates data from a spreadsheet and adds an illustration from an on-line picture library. They then send a draft on disk or by e-mail to be formatted by a secretary and incorporated into a larger document. This is far removed from the traditional office environment of copy typists and post rooms. Writing groups within multi-national companies may consist of people who rarely meet face-to-face and who come from widely differing cultures, yet they are expected to collaborate closely, and to tight schedules. The nucleus of this new, high-speed workplace writing is the computer.

It is easy to be complacent about the computer as a tool for writers, to believe that software is already pretty good, and to hope that innovation and market forces will combine to refine it still further. This book argues the converse: that existing software for writing offers limited support and is often ill-conceived. New developments could lead to writing environments that are even less usable than at present.

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Academic Writing and Information Retrieval'

Eva-Maria Jakobs and Dagmar A. Knorr

5.1 Introduction

Academic writing is a form of 'writing in the workplace'. It is a social and communal activity which is shaped by the needs and aims of academia as a social domain and an institutional organisation. This includes the approach to work and the organisational structure of the academic community in general, as well as the subjects, interests and methods of the individual disciplines (cf. Bazerman, 1988; Bazerman & Paradis, 1991; Swales, 1990; Vipond, 1993). In short, academic writing can be characterised as a typified activity in a typified situation.

As in many other writing domains, the area of academic writing is being increasingly influenced by electronic media. These media now form a permanent part of the daily professional work of academics as a tool for gaining access to, and communicating, specialist information. Exactly how the use of electronic media affects the production process and the final result of academic writing has to this date not been thoroughly examined (cf. Haas, 1987; Hill *et al.*, 1991; Jakobs & Knorr, 1995). This is also generally the case for the area of gaining access to specialist information to be used in the process of academic writing (cf. Riehm *et al.*, 1992) and related problems (cf. Kolb & Winter, 1995).

The use of external sources of information, such as the specialist text, is one of the characteristics of academic writing. But, in fact, existing writing models pay little attention to information retrieval from external sources (cf. de Beaugrande, 1984; Grabowski, 1995; Hayes & Flower, 1980; Herrmann & Hoppe-Graff, 1989). The existing models are limited to situations in which writers primarily use their own internal knowledge (from long-term memory). However, more recent studies show that, in many situations, writers are dependent on information from external sources (cf. Eigler *et al.*, 1990; Keseling, 1993; van der Geest, this volume).

In this paper, we intend to discuss what methods academic authors use to gain access to specialist information and to what extent electronic media help them to do this. Our discussion will be based on theoretical assumptions about academic writing and about the value of specialist literature for this process (Part 2), as well as on two surveys in which German academics participated (Parts 3 and 4).

5.2 Writing in Academia

The characteristics of academic writing are primarily shaped by the needs and aims of the modern academy as a social domain and institution. This institution serves not only to increase our common knowledge of the world, but also to create communities and build traditions.

Written forms of expression, particularly published texts, play an important role in this context. They are still considered the most important source available for the acquisition of knowledge and the transfer of ideas and research results within the academic community. Only what has been offered for open discussion within the academy and has been accepted is deemed to be 'common' knowledge. The development of knowledge is characterised by a permanent process of reading and interpretation, acquisition, evaluation, discussion, developing, and passing on concepts and data and forming convictions and personal views. Academics are not only strictly obliged to produce publications, but also continually to take up, study and interpret the research work of other academics and to comment critically upon it in their own work (Weinrich, 1994). The process of retrieving, studying and interpreting texts thus forms an obligatory part of academic writing.

The process of acquiring, reworking and passing on knowledge in the shape of a text is significantly influenced by the norms, expectations and forms of interaction within the academic community. Academic writing, like other kinds of professional writing, is integrated into a network of social relationships (cf. Bazerman, 1988; Spilka, 1988; Winsor, 1989, p. 271). Academic texts are thus, as a rule, addressed to more than one group of people. These texts address colleagues in the same specialist field in their capacity as authors of publications, as critics or as colleagues to be convinced of the writer's ideas, as experts or as editors.

For this reason, academic writing cannot be limited to the transfer of assumptions, ideas or facts. It also constitutes an important form of social interaction within the academic community. In both areas of interaction, academic and social, references made in specialist texts to other texts serve many purposes. They do not just serve to build a network of research results and to show the author's background knowledge (cf. Bazerman, 1988); they also help determine relationships.

The use of other people's words or ideas in text is often a way of establishing alliances or oppositions with individual readers or groups. Attribution, use of quotations, and referencing are all methods of establishing, altering, and maintaining relationships within a discourse community. When, in academic discourse, we use another's criticism of a community member, rather than being critical ourselves, we often do so to preserve our relationships. (Paré, 1991, pp. 54–5).

While there are a number of studies available on what motivates writers to make references to specialist literature (cf. Cronin, 1984; Jakobs, in press; Swales, 1990), there is a lack of studies concerning how other people's texts are used in the writing process (cf. Jakobs, 1995).

In this paper, it is assumed that the activity of searching for specialist literature as well as managing and processing such literature is mainly determined by interests that arise from the subjective and objective needs and aims of academic writing. These include constraints set by the writing task itself.

Further constraints arise from the individual stages of work which go into a text, its stage of development and the author's personal preferences. Let us explain this briefly.

During the preparatory stage (pre-writing), i.e. when the knowledge of the topic to be handled is limited and/or the writer is uncertain of how to proceed, turning to specialist literature is an ideal means to gain an overall view of the area of interest and to use existing research and/or ideas and knowledge to stimulate thoughts.

If the author has already formed assumptions about the topic, these will have to be examined to determine their originality and workability. This requires literature research to ensure that an idea or a solution does not already exist, as well as the consultation of specialist literature so that the author can compare his or her own assumptions with the theories and results of other researchers.

During the writing stage, additional reasons for consulting literature can arise. One characteristic of academic writing is that, because it is externally recorded, either conventionally or electronically, and since it requires the linearisation of ideas, it can contribute to making thoughts clearer and help to discover interrelationships. Bereiter (1980) describes this as the epistemic–heuristic power of writing (cf. Molitor, 1984).

Shifts in knowledge can lead to a text source being viewed differently. The author of a text will often come back to a specialist text when his or her interest, evaluation or perspective concerning a text source has changed. This is above all the case for sources to which the author wishes to make an explicit reference. In addition, memory gaps will often require text sources to be reread in order for the author to be certain that his or her recollection and/or interpretation of a text source is correct.

During the writing stage, the original text is often needed if the writer wishes to quote from it or check whether references made to it are correct.

A further assumption made in this paper is that the process of information retrieval is influenced by subject-specific forms of communication and preferences for certain publication channels. This includes, for instance, the fact that specialist publications in the field of natural science usually appear as articles in journals, whereas in the humanities the production of books plays an important role (cf. Baunert *et al.*, 1987; Weinrich, 1994).

The following discussion is guided by two questions: to what extent do the survey participants use electronic media to search for, manage and process source information? And: does the available technology actually help writers?

5.3 Writers at Work – Two Empirical Studies

In order to gather information about how academic writers produce their texts, the two present authors each conducted an independent survey of German academics. Knorr's survey asks what media academic authors use to produce their texts, as well as why and how they use these media. The survey is based on assumptions about how the medium used influences the writing process. These assumptions were drawn from case-studies. The survey was carried out in the winter semester of 1992/93.

Jakobs's survey asks how academic authors use other specialist texts in their own writing and what factors (subject field, work tools, individual writing style) influence their approach. The questionnaire was put together according to assumptions about how specialist literature is used in the writing process. The survey was carried out in the winter semester of 1993/94.

Both surveys are designed to cover a broad range of possibilities to allow the writing process to be recorded in as much detail as possible. They are similar both in the group of people who were targeted and the design of the questions. In both surveys closed-ended questions are predominantly used. Answers are given on a scale from 1 to 5 (1 = 'does not apply to me at all', 5 = 'fully applies to me'). They are complemented by open-ended questions and yes-no questions. The studies were evaluated using descriptive methods. In order to ascertain whether the groups that were investigated gave significantly different answers, the Kruskal-Wallis test and the t-test were used in Knorr's study and the chi-square test was used in Jakobs's study.

In Knorr's survey, 200 questionnaires were sent to 41 universities and research centres in Germany. 138 questionnaires were returned and evaluated. This represents a return rate of 69.0%. In Jakobs's survey, 240 questionnaires were sent to 19 German universities. 106 people replied. This represents a return rate of 44.2%. Of the 106 questionnaires that were sent back, 104 were evaluated.

Age and sex of the participants 36 women (26.1%) and 101 men (73.2%), (one person gave no indication of sex), took part in Knorr's study. The participants were aged from 25 to 65. The average age was 39.8 years. 37 women (35.6%) and 67 men (64.4%) aged from 22 to 68 participated in Jakobs's study. The average age was 37.8 years.

Status of the participants The participants can be divided into four social groups, determined by their qualifications and position of employment within their institution. These groups will be referred to as 'status groups'. Group I is made up of professors and lecturers.² Group II consists of teaching staff with a number of years of experience, who may or may not hold a doctorate. Group III represents those who are studying for their doctorate. Most of them graduated with their German diploma two years ago. Group IV is made up of students and graduates working on projects at a university or another institution.

	Knorr's study		Jakobs's study	
	n	Average age	n	Average age
Status group I	60	48.5	38	48.5
Status group II	30	37.6	29	36.7
Status group III	47	30.2	12	30.6
Status group IV	-	-	25	26.5

Table 5.1 Distribution over the four status groups.

Field of discipline of the participants Knorr's study was dominated by representatives from the philologies, psychology, computer science and philosophy (n = 137). There were also participants from the disciplines of education (n = 5), medicine (n = 3), physics, law and economics (n = 2 for each discipline), as well as biology, social sciences and cultural studies, sociology and engineering (n = 1 for each discipline). 15 people were recorded as belonging to two disciplines. They are excluded from the examination of subject-specific populations. In Jakobs's study the field of linguistics is represented most strongly.

	Knorr's study		Jakobs's study	
	n	%	n	%
Linguistics	32	23.4	36	34.6
Psychology	29	21.2	23	22.1
Computer Science	26	19.0	-	-
Philosophy	16	11.7	-	-
Chemistry	-	-	20	19.2
Education	-	-	18	17.3

Table 5.2 The disciplines most commonly represented in the two studies.

Psychology, chemistry and education are represented to a similar degree. The group made up by representatives of medicine was so small (n = 6) that, in the examination of subject-specific differences, it is only used as a comparison. One participant is a computer scientist working in the field of medicine. She is excluded from the analysis of subject-specific work behaviour.

5.4 Survey Results

5.4.1 What Information Retrieval Sources and Methods do Academic Writers Use?

In Jakobs's study the participants were asked what retrieval methods they use when looking for literature. A list of possibilities was provided. The participants were asked to indicate on a scale from 1 to 5 (1 = 'does not apply to me at all', 5 = 'fully applies to me') to what extent they use the retrieval methods named.

Retrieval method	Mean score
Evaluation of specialist literature	4.49
Exchange of ideas with colleagues	3.49
Evaluation of collections of abstracts*	3.00
Evaluation of bibliographies	2.93
Evaluation of file card systems	2.54
Research on specialist CD-ROMs	2.39
Research in local literature databases	2.30
Research in other literature databases	2.14
Evaluation of microfiches	1.81

* Such as *Chemical Abstracts* (American Chemical Society, 1970)

Table 5.3 Distribution of information retrieval sources and methods according to preference (mean scores).

The highest averages among all participants are scored by the methods 'evaluation of specialist literature' ($\bar{X} = 4.49$) and 'exchange of ideas with colleagues' ($\bar{X} = 3.49$). This result underlines the importance of publications and personal contact within the academic community. Electronic retrieval methods are used, although less often than expected and usually as a complement to other methods.

The participants were free to add further research methods to the list. The additional methods named provide a good idea of the variety of individual approaches used to obtain specialist information. These approaches range from consulting publishers' brochures to coincidental discoveries in book stores and checking mailboxes and discussion lists on the Internet.

The discipline factor The comparison of answers according to disciplines shows subject-specific preferences for individual retrieval methods and for the way in which they are combined. Participants from the field of chemistry prefer to consult chemical abstracts ($\bar{X} = 3.53$, $n = 19$), in addition to evaluating specialist literature. The linguists give second place to the evaluation of bibliographies ($\bar{X} = 3.56$, $n = 36$). The answers concerning the use of index cards in libraries vary significantly depending on the subject field ($p < 0.05$); concerning the use of bibliographies the variation in answers is highly significant ($p < 0.01$).

This is also the case for research done on CD-ROMs. The linguists questioned in the survey indicate that they use this method fairly rarely ($\bar{X} = 2.17$, $n = 21$). For the educationalists the results are average ($\bar{X} = 3.00$, $n = 17$). The participants from the field of medicine use research on CD-ROMs the most extensively. In this case, the method dominated all other possibilities with a mean of $\bar{X} = 4.17$ ($n = 6$).

The variation in retrieval methods can be explained by the different communication patterns of the various disciplines. In the field of chemistry, chemical abstracts are the dominant source of information. So research to obtain specialist information is mostly done using this source. In linguistics or education no such significant collection of abstracts exists.

The different answers concerning the use of research on CD-ROMs are related to the different methods that are used to store specialist literature electronically. Those who work in the field of medicine, for instance, have access via Medline to a well-organised database which is updated regularly, whereas this is only the case to a limited extent for linguists using the Modern Language Association's (MLA) CD-ROMs. As studies carried out by Maciuszko (1987, 1989) indicate, combining retrieval methods can be useful to the extent that individual media cover different collections of data and thus complement each other.

The status factor The results of Jakobs's study indicate that the age and the social status of the participants tend to be of importance irrespective of their subject field. Research in external databases is more often carried out by university professors (status group I; $\bar{X} = 2.61$, $n = 36$) than by young graduates and students (status group IV; $\bar{X} = 1.44$, $n = 25$). This probably has to do with the degree of experience and motivation of those involved. Some of the professors write that they have research in databases done for them, to save time and inconvenience. If this 'passive' use of electronic data retrieval were to be included in the evaluation, the results for professors given above would be higher.

5.4.2 What Media are Used to Record Data from Specialist Texts?

Both Knorr's study and Jakobs's study ask what media the participants use to record and manage bibliographical information. To this effect, a list of conventional and electronic storage media was provided.

The answers show that the participants belong to three user groups: people who only use conventional methods (file cards, lists on A4 paper, etc.), people who

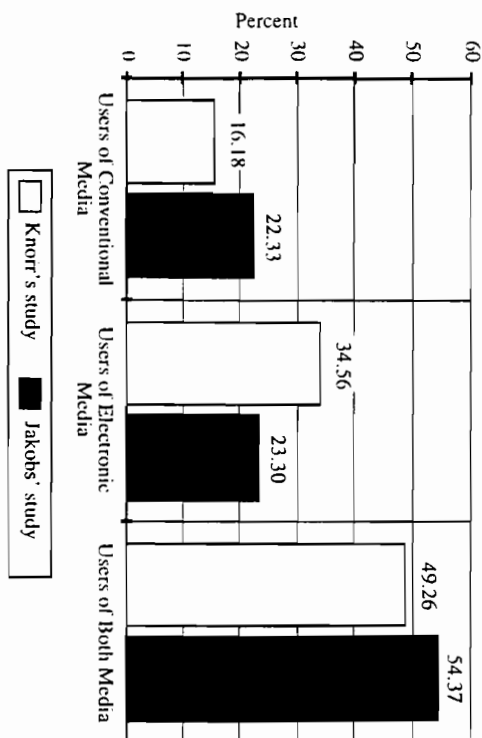


Fig. 5.1 Comparison of storage media used.

use electronic media exclusively (databases, word processors), and people who use both conventional and electronic methods. Those belonging to the first group will be referred to as 'conventional users', representatives of the second group 'electronic users' and those in the third group 'combination users'.

A comparison of the distribution results of both studies shows similar tendencies: the combination user is dominant. Almost one half of the participants in Knorr's study (49.3%) and over one half of those questioned in Jakobs's study (54.4%) use both conventional and electronic storage media.

The discipline factor The combination user is dominant in all fields of discipline. There are differences where conventional and electronic users are concerned. Among the computer scientists, linguists and psychologists questioned in Knorr's study, the electronic user dominated the conventional user. In the fields of philosophy the conventional user dominated. Jakobs's survey results confirm a similar tendency among psychologists: here there are also more electronic users than conventional users.

5.4.3 What Kinds of Programs are Used to Manage Literature?

The management of literature data enables information that has already been recorded to be easily relocated at a later stage. The retrieval options are determined by the information recorded and the storage medium used. Usually at least bibliographical details are held on record. If this is done conventionally (i.e. using file cards), the information is classified according to one criterion (such as the author's name). This limits how the data recorded can be traced at a later stage. Electronic data management systems, particularly databases, enable information to be retrieved much more flexibly (cf. Weingarten, 1994). Depending on the chosen structure, various information units of a data record can be specifically selected for sorting or retrieval work.

Apart from databases, word processors can also be used to manage information. They replace the function of conventional management methods, such as collections of sheets of paper or literature lists.

Of the two electronic management systems, word processors and databases, it is the databases that have more comprehensive functions and are more flexible when it comes to retrieving information. Thus it was assumed that academics who use electronic media to manage their literature data would prefer databases to word processors. However, the results of Knorr's study do not confirm this assumption.

81.6% of those questioned in the studies use electronic storage media to manage their literature (electronic and combination users). 42.5% of the participants use a word processor, 35.4% a database and 12.4% use a combination of the two. 14.2% record their data in *bitb*-formats* (n = 118).¹ The problem of sorting entries is solved by the users of word processors simply by inserting new titles at the appropriate place ($\bar{X} = 3.97$). The use of search operations that go beyond one string was not surveyed.

It was further assumed that the information recorded is used differently, depending on the storage medium; or, in concrete terms, that users of databases use their data more effectively than those who use word processors. How effective this use is has to do with the use of stored data in the writing process.

The effectiveness of their chosen medium is rated differently by the participants in Knorr's survey: 33.0% say that they use their recorded data effectively (a result of 4 or 5), 38.2% negate this (a result of 1 or 2) (n = 97).

If the answers given by the database users and the users of word processors are compared, the following change can be observed: 47.5% of the database users (n = 40) use their data effectively, 43.8% of those who work with word processors (n = 48) do not. The difference in these answers is highly significant ($p < 0.01$).⁴

The results show two things: the information supplied by the participants concerning that databases are more suitable for literature management than word processors. However, the participants still tend to use word processors rather than databases.⁵

The results suggest that the choice of a retrieval instrument not only depends on the features that it offers in terms of structured storage and flexible management of data, but on other factors too. What these factors are must be left to further investigations. The cost factor, i.e. the expenses incurred in the period in which skills for handling the system are being acquired, would need to be investigated. Learning to use literature databases requires a great deal more time and effort in comparison to learning to use word processors.

Investigations also need to be carried out to determine what kinds of interaction arise at different stages of the writing process when the author is working with externally recorded information. Some of these interactions will be discussed in the next section.

5.4.4 What Programs are Used for Literature Management?

Knorr's survey asks what programs are used for electronic literature management. The participants name the following programs: Word (n = 41), *bitb*-format (n = 16), FileMaker (n = 12), WordPerfect and dBase (n = 6 for each program); Emacs,

EndNote, HyperCard, LiBank and LiTi (n = 3 for each program); Brain and LiDos (n = 2 for each program). The following are each named once: Allegro C, AskSam, INCRES, LiDat, LARS, Littera, MacSource, MS Access, Pro-Cite, Refer and Stignum.

The survey participants use their programs differently depending on whether they work with special literature management programs or multipurpose programs (such as Word or FileMaker). 53.8% of those who work with special literature management programs say that they use their literature data effectively (n = 25). This is the case for only 23.1% of those using multipurpose programs (n = 73).

Commercial literature management programs are seldom mentioned. At the time of the surveys these programs had only been available on the market for a short time. The survey participants mostly use multipurpose programs (word processors or databases) or *file*-formats which have been adapted for their own use and which are often not dependent on the operating system.

Word is by far the most commonly named program. This is so for two reasons: Word can be used with Windows, DOS and Macintosh systems. Many universities in Germany have a campus license for Word. This means that this program can be installed on newly-purchased computers without great expense and bureaucracy. This is not the case for software for which a university has no campus license. Thus the distribution strategies of software manufacturers can in some circumstances influence the circulation and use of software.

The answers given by the participants in Knorr's study suggest that buying a commercial literature management program depends not only on the specific features of each particular program (cf. Glock, 1994; Hanson, 1995), but also on the amount of money available for the purchase, the knowledge of the software on offer and the ability to judge what functions are required from the program. These and other factors must be considered when the use of specific software is assessed.

5.4.5 What Makes the Participants Prefer a Particular Storage Medium?

Both surveys ask in an open-ended question why the participants prefer to use a particular storage medium, either on its own or in combination with other media. The answers point to various factors which influence the choice of storage media. These include the characteristics of the medium (cf. Sharples & Pemberton, 1992), the conditions at the workplace, personal style of working and other individual criteria.

The combined use of different storage media can, above all, be explained by the combination of changing workplaces and conditions, the varying needs of different stages of work and the gradual replacement of old work tools by new technology.

Characteristics of the media In both studies participants say that recording text data using literature management programs is more systematic and more comprehensive than before. They say that items of data are lost less often and that they are simpler to manage. It is easier to keep an overall view of the data. The writers are able to make headings, which can force them to have their first proper look at the text. The option offered by literature management programs of complementing bibliographical entries with abstracts or commentaries is described as being very positive. Other advantages named are the options which allow the author to exchange data between databases, make lists on a particular topic (for

* *bitb*-files' are text-only files with a special tagging convention.

teaching purposes, etc.), incorporate literature data into text files, compile a bibliography for a text and adjust the format of quotations automatically.

One advantage of conventional literature management systems is said by participants to be the fast and easy access to lists and file cards. No complicated equipment is required and file cards and loose sheets of paper are easy to transport. The users are guided by their eyes along shelves and through lists. File cards can be arranged in all sorts of ways, for instance according to optical criteria.

Reasons for the combination of conventional and electronic storage media In Jakob's study, the participants give reasons as to why they combine various methods of literature management or use them side by side.

- Changing work conditions

One important reason why different storage media are combined can be found in the conditions in the workplace. These include whether or not a computer is available for use and whether the writer has access to literature databases, etc., via connection to a network or a modem. Participants say that different work conditions at home and at work, at their institute or at the library, require the combination of different media. A sheet of paper or the traditional file card is the most suitable item for a visit to the library. Handwritten notes can be added to the writer's own literature management program or to one at the workplace at a later stage.

- Personal style of working

Other reasons have to do with the writer's personal style of working: Participants say that literature lists can be written without interrupting their reading to any great extent. Since with electronic management it takes a long time for the data to be entered, it is more economical to collect handwritten notes and to enter them into the computer when necessary. In addition to using electronic management, some of the participants collect copies of texts and handwritten work which they store in folders according to topics. They say that electronic storage gives them a sense of security about their data management, while collecting copies corresponds to a paper-oriented style of working.

- The replacement of old storage methods

The participants often explain that they use different methods side by side because of the influence of the transition from conventional to electronic forms of data management. The transition requires a certain period of adjustment and the skills needed to handle the computer have to be acquired. Some participants say that their old collections of file cards need to be entered into the computer, but that there is no time and nobody to perform the task. This problem is sometimes solved by their continuing to use old file cards and only entering new literature data into the computer.

- Individual factors

In addition to the reasons given above, personal factors are named to explain why different media are used side by side. These are, for instance, the inability to choose between one medium and the other, reasons of convenience or the wish to work both on paper and with a database.

5.4.6 How Are the Data which have been Recorded Electronically Incorporated into the Text?

Jakob's study asks whether writing at a computer influences the way the participants make use of quotes and references. 19.6% of those who use a computer to do their writing say it does. The changes described by the participants primarily have to do with the technical aspect of making quotes and references. The option of transferring bibliographical details to a text file and having a bibliography compiled automatically is one of the convenient improvements named.

However, these advantages tend not to be used very often. Only one fifth (21.3%) of the participants say that they often transfer quotes to their text; about one quarter of them (24.6%) use this option fairly rarely; 42.9% of the participants often transfer literature references to their text document, while 27.7% do so occasionally. Nine people (9.3%) have their bibliographies compiled automatically (in Knorr's study only one person uses this option).

10.3% of the participants say that using literature management and word processors makes it easier to check references made in a text to ensure that they are correct (1% in Knorr's study). Many of those questioned in Jakob's study use special characters to mark references in the text. This allows these parts of the text to be quickly identified without any being missed out and thus simplifies reworking as well as the insertion of sizable passages of text later on.

Writing at a computer also makes it possible to shift or wipe quotations and references within a text or to add them to a text easily. This option is used by 9.3% of the participants in Jakob's study.

5.4.7 What Influence do the Media Have?

The influence of electronic retrieval media can be seen in both studies in the improved quality of search procedures and results. According to the participants, electronic retrieval tools help them to work in a more structured and focused way. Search results are more comprehensive and the users are more likely to find what they need. Search and management procedures are considered to be simpler, more effective and more professional. This leads to research being done more often, and more, or a broader range of, literature being found and recorded. The writers are able to delve into databases outside their own institution and subject field, which gives rise to more ideas and inspiration coming from other areas.

Only a few of the participants in Jakob's study name qualitative effects of the computer on the way they use quotations and references. These effects include the tendency to quote more often (4.1%) or (by using smaller letters) to make longer quotations (1.0%). Two people (2.1%) say that their approach to writing has changed. Whereas they used to look for quotations to fit the text they were writing, they now build up their text around quotations which, once the structure of the text has been drafted, are grouped under chapter titles.

5.5 Summary

In an academic community dominated by the motto 'publish or perish', the ability to write is considered to be the most important professional skill. In deciding what to commit to paper, an author must take into account certain conventions in academic

writing. One of these conventions is to consider relevant literature. Thus the process of retrieving, reading and interpreting texts is a typical part of academic writing.

One assumption made in this report is that such processes are influenced by various factors. These include the subject field to which the authors belong, their style of working and the work tools at their disposal. The survey results show that depending on subject-specific preferences for particular communication channels, different information sources are used to a varying degree. The results equally show that the conditions at the writer's workplace have an effect on the choice and combination of storage media and the use of retrieval methods.

The majority of the academics who took part in our two surveys say the use of electronic media has a positive effect on the quality of their retrieval work. The majority of the participants describe electronic methods as a valuable work aid.

The advantages of electronic retrieval methods are seen in the improved quality of search operations and input procedures, as well as in the fact that recorded data is easier to handle. The participants' answers suggest that conventional forms of literature management are being increasingly replaced by electronic media. It can be assumed that this trend will be accelerated by the increasing networking of workplaces and libraries and the option which allows writers to carry out research (on- or off-line) from their workplace and to record the results in their own database.

However, the integration of external source information into the author's own text seems hardly to have been changed by the use of electronic media. Word processors and databases only offer the writer a range of technical aids which are still used fairly rarely. The reasons behind this could be examined in further studies.

It seems that, as yet, the computer offers little support for processing the content of source information and incorporating it into a text. The creativity, perception and evaluation involved in the focusing of source information and its integration into the writing process are activities which remain uniquely human.

Notes

- 1 We would like to thank to Thea van der Geest, Mike Sharples, Joachim Grabowski, Christopher Habel and Stephanie Keller for their helpful comments. Many thanks also to Rowan Smith for the translation.
- 2 A lecturer, or in German 'Dozent', is a person who has a postdoctoral lecturing qualification (Habilitation). The 'Habilitation' is the third and highest academic degree in Germany.
- 3 The results given here differ from those shown in Knorr (1995). The differences derive from the evaluation of two different questions. In Knorr (1995) the answers given to the closed-ended question of what kind of program the participants used (word processor, database or other) were evaluated, whereas in this report the answers to the open-ended question which asked for the program used, whereas in this report the answers to the open-ended question which asked for the program names in view of the kind of program used are evaluated.
- 4 Participants who work using a combination of a database and a word processor were excluded from this analysis, as were .bib-format users. In the first case this was done in order to avoid a mingling effect, in the second because .bib-formats lack the characteristics specific to the other programs.
- 5 These results roughly correspond to the findings of a similar study conducted in 1989/90 by Schulthauer (see Knorr, 1995, pp. 66ff).

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Professional Authorship in the Electronic World

Jane Dorner

6.1 Introduction

Professional writers have faced change from technologies ever since stonemasons gave way to papyrus scribes and medieval illuminators were replaced by typesetters. In all change is challenge: book writers, journalists and academic authors have found they must unite to maintain the integrity of the authorial voice. This is important, both for our cultural heritage and our economic system.

In modern society, writing has become a profession. Surrounding it are economic structures, societal influence, ethical codes of conduct and university study courses. As a community, we rely on the written word for information, entertainment and business integrity. Naturally enough, writers, as providers, have grouped themselves into organised societies. This is not simply to protect their professionalism, but because the business of writing is part of a worldwide copy-right industry. Copyright industries as a whole account for significant earnings in the developed world. According to a study in the US two years ago, this is a sector that is growing economically at a faster rate than any other – 6.3% growth as against an average of 2.5%. In the UK a study published early in 1994 found that copyright industries contribute 5.4% to the GNP.¹ That's a high ratio for an industry with what are beginning to look like intangible assets, and it is expected to increase the deeper we progress into the Information Society. The intangibility arises out of digitisation, which dematerialises those products (books, magazines, periodicals) that have been fundamental, not just for export, but for the sharing of ideas. Nevertheless, transmission of such works is taking place and will continue. The digital production and distribution of copyright works is likely to become a profitable reality. Authors expect to share in that profitability. But success depends on a number of issues that need addressing. These include:

- redesigning the laws in all countries that deal with intellectual property (\$1);
- safeguarding the authenticity of written information (\$2);
- understanding different imperatives amongst those whose living depends on writing (\$3, \$4);
- protecting the writer as a professional (\$5).

We have worked very hard over centuries to achieve a working copyright system, and it is unlikely that we will be willing to throw it away simply because