A Study of Computer-Based Current Awareness Bulletins—UKCIS Macroprofiles†

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UKCIS Macroprofiles are current-awareness bulletins produced by searching the CA Condensates computer-readable files. Since its introduction in 1968 covering only two titles, the scope of this range has been increased to cover a wide variety of subjects. The historical background to the development of Macroprofiles and methodology for costing and promoting is described.

HISTORICAL BACKGROUND

This paper describes the development of a series of current awareness bulletins, now known as UKCIS Macroprofiles, produced by the United Kingdom Chemical Information Service (UKCIS). The material contained in these bulletins is selected by computer scanning of the CA Condensates magnetic tape using standard search profiles. During the eight-year period 1968–1976, the number of topics in the Macroprofile series has risen from zero to 45 and the number of subscribers to about 900. The topics presently available are listed in Table I. The development of the Macroprofile series can be considered in terms of three "time-slices" which are loosely connected with stages in the development of UKCIS as an organization.

UKCIS started life as The Chemical Society Research Unit in Information Dissemination and Retrieval (CSRU) set up in 1966 by The Chemical Society and the Office of Scientific and Technological Information (OSTI). The aim of this unit was to explore the feasibility of providing SDI services using computer searching of magnetic tape information sources. Chemical Abstracts Service (CAS) agreed to supply magnetic tape databases in exchange for reports on the response of the UK user community to computer-based reference retrieval. The initial experiments carried out by CSRU were based on Chemical Titles (CT) and Chemical-Biological Activities (CBAC) using the CSRU's serial search system. Searches were written to individual requirements and the output was provided gratis in exchange for "feedback" on the usefulness of the results.[1]

It soon became apparent that certain subject areas were common to several searches or were of interest to research groups or specialist groups, and eventually in 1968 it was suggested that search output be copied and supplied to a group of people on a regular basis. I must emphasize here the extreme flexibility of the terms of reference given to the Research Unit. An idea could be put forward and acted upon almost immediately so long as it had some bearing on computer-based retrieval and dissemination of information. Within the space of a few months a search had been written, a sample bulletin produced, and a mailing list of 120 built up for the first Macroprofile topic, "Radiation and Photochemistry". Soon afterwards a second topic, Steroids, was produced in bulletin form. These two bulletins were produced from Chemical Titles, and in the first instance were supplied free of charge by the Chemical Society under the name of CHEMSCANS.

For the first few issues the output was edited and pertinent references were *hand-typed* in upper and lower case and reproduced by cyclostyling. This "labor-intensive" product was soon replaced by less perfect bulletins produced by photocopying the original printout.

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Table I. UKCIS Macroprofile Topics, December 1976[a]

*Chemical Hazards
Engine Exhaust
Environmental Pollution
Gaseous Waste Treatment
Liquid Waste Treatment
Pollution Monitoring
Recovery and Recycling of Waste
Solid and Radioactive Waste
Trace Metal Analysis
Fungicides
Herbicides
Prostaglandins
Steroids (Chemical Aspects)
Steroids (Biochemical Aspects)
Analytical Electrochemistry
*Gas Chromatography
*Gel Permeation Chromatography
*High Speed Liquid Chromatography
*Paper and Thin Layer Chromatography
*Electron Spin Resonance (Chemical Aspects)
*Electron and Auger Spectroscopy
Mössbauer Studies
*Nuclear Magnetic Resonance (Chemical Aspects)
*Catalysis (Applied and Physical Aspects)
*Catalysis (Organic Reactions)
Colloid Chemistry (Applied Aspects)
Colloid Chemistry (Physico Chemical Aspects)
*Corrosion
*Electrochemical Reactions
*Ion Exchange
Natural Gas
Petroleum Chemistry and Technology
*Solvent Extraction
Metallo Enzymes and Metallo Coenzymes
Organo Transition Metal Complexes
Organo Fluorine Chemistry
S-Heterocycles
Computers in Chemistry
Liquid Crystals
Photobiology
*Radiation Chemistry
Semiconducting Materials
*Surface Chemistry (Physico Chemical Aspects)
*Photochemistry

[a] An asterisk denotes that the topic will be available as CA Selects by July 1977.

The burst of speed with which these first bulletins came into existence was followed by a slow development toward a range of selected bibliographies acceptable to the subscribers as regards coverage, format, and price and to the producer as regards cost/revenue ratio. This development took place over the period 1970–1976. At the beginning of this period several organizational changes occurred.

UKCIS was established as a division of The Chemical Society dealing with computer-based information. At that time also The Chemical Society entered into a marketing agreement with the American Chemical Society whereby CS acquired full marketing rights for Chemical Abstracts Service products

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in the British Isles. One of the aims of the UKCIS service department was to provide SDI services based on CAS products on a "not-for-profit" basis. Experience with "Radiation and Photochemistry" and "Steroids" had already shown that selected bibliographies of this type have certain advantages. These can be summarized as:

(1) Bulletins fill the gap between individual SDI searches of CAS tapes and printed Chemical Abstracts or Section Groupings covering very broad fields.

(2) Each subscriber has his own copy of the bulletin which he can carry with him, write on, or cut up for filing purposes or for requesting reprints.

(3) It is often easier to write a high-performance search covering a wide field than to extract specific aspects of that field. The cost of searches to produce bulletins are therefore quite low, and the printing and reproduction costs are spread over a group of subscribers. Selected bibliographies can therefore be relatively low-priced.

(4) Computer-produced bulletins are psychologically more acceptable than individual computer searches since they are similar in appearance to normal printed bulletins and have a fixed price.

Selected bibliographies are thus an ideal form of SDI for research groups, particularly those in academic establishments where resources are tight, coverage of broad fields is required, and each member of the team is particularly interested in some aspect of that field. The decision was taken to increase the number of UKCIS Macroprofiles, but what topics should be covered next? Clearly the topics had to be of fairly general interest, and the bulletins were more likely to be popular if papers on the topic were different or tedious to retrieve by manual methods. It was therefore decided to try out some bulletins in the field of "techniques" where references of interest are scattered widely throughout the secondary data base. The topics chosen were Nuclear Magnetic Resonance (NMR), Electron Spin Resonance (ESR), and Gas Chromatography (GC), which are important techniques covered by The Chemical Society's Specialist Periodical Report (SPR) Series, and Paper and Thin Layer Chromatography (TLC), a rapidly developing field at that time. The searches were matched against CA Condensates, a much broader search base than Chemical Titles.

PRICING, PRODUCTION, AND PROMOTING

After an experimental six-month period, a close cost analysis was made. Subscription levels were low (about 10/topic on average) and only the small bulletin on TLC "broke even" at the charge of £30.00 per year. The higher output topics incurred large reproduction costs. It was clear that if production of Macroprofiles was to continue (a) costs must be reduced and (b) numbers of subscriptions increased. These two aims were achieved as follows. Production costs were cut by setting a maximum of 100 references per issue for all Macroprofile topics and administration costs by setting a fixed price for all topics regardless of size. Reproduction costs are dependent on the number of pages in the bulletin so the print program was altered to give the maximum number of references per page while retaining the maximum amount of useful data. A sample Macroprofile reference is shown in Figure 1.

With this format it is possible to get eight references on a Macroprofile page, and there is enough information for the reader to locate interesting references in Chemical Abstracts or in the primary literature. Some existing titles had to be split or streamlined to satisfy the size limitation. These alterations were made on the basis of advice from existing subscribers who in general welcomed them since the streamlined bulletins covered their interests more precisely and

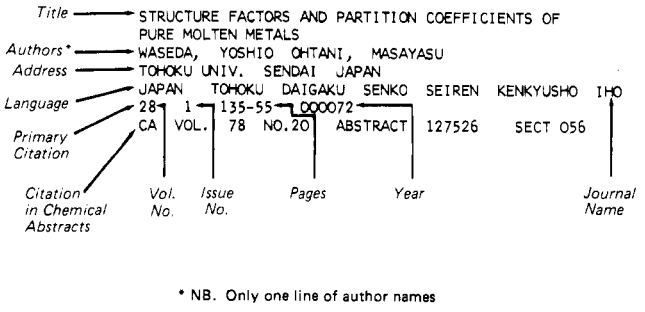

Figure 1. Sample Macroprofile reference.

were easier to scan. Subscription levels were increased by a great intensification of promotional activity. Institution of these changes put Macroprofile production on a sounder footing; the price was dropped to £27.00/year plus postal surcharge, and the number of topics was increased progressively every six months.

Selection of topics became more scientific. From our cost analysis we were able to draw up a "specification" for suitable Macroprofile topics:

1. Broad subject areas of interest to groups of people
2. References difficult to locate manually in CA
3. References spread widely throughout CA
4. High precision, high recall search possible
5. Output below 100/issue

Some potential topics were suggested by the user community or by members of UKCIS professional staff, and some topics suggested themselves, being very much in the forefront of public awareness, e.g., environmental pollution.

Sources of Macroprofile topics can be summarized as:

1. Suggestions from UKCIS professional staff
2. Suggestions from user community via publicity material, meetings, visits, conferences
3. Chemical Society Specialist Periodical Report Topics
4. Topics recurring in SDI profiles

Once a potential topic has been selected, it is developed as follows. First, a provisional search is entered into the batch system for a series of test runs. Output with keyword phrases is printed for these test runs so that the terms responsible for the retrieval of each item can be identified. After each test run the results are scrutinized by an expert and any necessary amendments are made to the search profile. The "experts" are often those who first suggested that the topic be produced as a Macroprofile. Where the topic has been suggested by UKCIS staff, several experts in the field are invited to assess the test results and suggest improvements. They are asked to indicate specifically: (a) what the coverage of the bulletin should be, (b) which of the retrieved references fall outside this coverage, and (c) any references pertinent to the topic which have been missed by the search. Point a involves decisions on the "limits" of the Macroprofile coverage, i.e., aspects to be specifically included or excluded. Point b involves relevance assessment of each retrieved item and analysis of the terms responsible for retrieval. Point c involves manual searching to locate missed items and decisions on how the search should be altered to retrieve such items from future issues.

Once the expert considers that the search profile is sufficiently refined, the performance is matched against the "Macroprofile Specifications". If it seems satisfactory on all scores, a start date is fixed and the topic is promoted. In addition to space advertising and inclusion in general UKCIS publicity leaflets, much directed mailing has been done to publicize each Macroprofile topic. Individuals likely to be

Table II. Macroprofile Development: 1968-1976

Year	Topics	Charge/ year	Orders/ topic	Promo- tion
1968	2	£0	100	–
1970	2	£12	50	–
1971	2	£35	44	+
1972	6	£35	20	+
1973	6	£27	20	++
1974	28	£29/38[a]	20	+++
1975	40	£29/38[a]	22	+++
1976	45	£41/50[a]	19	+++

[a] Price including postal surcharge Europe/outside Europe.

interested in particular topics have been identified from conference lists and handbooks and from the bulletins themselves via the author/address entries. Those responding to Macroprofile advertising are often contacted by telephone. This has proved to be a worthwhile exercise in the UK. The cost of contacting potential customers by phone is relatively low, and one quickly obtains the person's views on the potential usefulness of the product to him, how he feels it could be improved, and often an indication of other products and services which might fill his information requirements. The promotion of Macroprofiles on this personal basis has certainly been a major factor in convincing UK chemical information users of the existence, convenience, and reliability of computer-based reference retrieval services. The bulletins also proved popular outside the UK; about 50% of subscriptions are from overseas.

COST/CONVENIENCE RATIO

Having now traced the overall development of the Macroprofile range and the methods used for their production, let us now consider the effect of price changes and promotional activities on the level of subscription. This is summarized in Table II. First, let us study the situation between 1968 and 1973. During this period the "original" topics "Radiation and Photochemistry" and "Steroids" were produced, followed later by the four bulletins covering techniques, making a total of six topics. Very little promotion was done; the original two topics attained high circulation via the "invisible college". Members of UKCIS staff were in touch with key members of these groups, and the interest spread from there. Introduction of a small charge, however, immediately reduced the number of subscribers to 50%. A fairly large price increase in the following year had a much smaller impact on number of subscriptions. Most users were clearly "hooked" on the product and were willing to pay for it. Over this period very little active promotion took place, so the number of subscribers to the four bulletins on "techniques" was at first very low. This brought down the average number of subscribers per topic to 20.

In 1973 it was decided to intensify promotion by direct mailing and telephone contacting, and the number of topics was greatly increased. The effect of this was to accelerate subscription to a topic immediately after it was introduced. The average of 20 subscribers/topic obtained for the first six topics over five years in the absence of promotion has been maintained subsequently over three years when the number of topics increased from 6 to 45. The minimum number of subscribers required per topic to "break even" is 10–15, so we are fairly happy with the present average of 20 per topic. The number of subscribers per individual topic, of course, varies widely, but we are happy to continue producing low circulation titles because our aim is to fill current awareness needs. It is probable that users of low circulation bulletins could not afford to run individual searches and therefore in the absence of the bulletin would make no use of mechanized retrieval. The final point to note in Table II is the fall in subscription subsequent to the fairly large price increase necessary in 1976. It is clear that the cost/convenience ratio is a critical factor. Between 1972 and 1975 the cost of each Macroprofile topic was held steady below £30.00 ($60.00) per year, and the number of subscriptions increased steadily once promotion was adequate. However, staff, materials, and postal costs have recently been spiralling upwards in the UK, and in 1976 prices were increased to nearer £40.00 ($80.00) per annum. This had an adverse effect on number of subscriptions; with resources tight, the cost/convenience ratio of UKCIS Macroprofiles was no longer acceptable to some users. The time was therefore ripe for a change in the product to cut costs or increase usefulness.

FUTURE TRENDS

UKCIS's "pioneer" work on selected bibliographies has shown that they have a major role to play as low-priced secondary information sources for individuals or research groups. For this and other reasons, in September 1976, CAS launched its own range of selected bibliographies under the name "CA SELECTS". These bulletins include abstracts and are generated via the CAS sophisticated photocomposition system. Large-scale production aimed at world markets results in lower unit cost. Thus high-quality bulletins including CA abstracts can be provided at a lower price than the present UKCIS Macroprofiles. Two Macroprofiles topics, "Photochemistry" and "High Speed Liquid Chromatography", were included in the first batch of CA Selects launched and 14 more Macroprofile topics have now been converted to CA Selects (see Table I).

CA Selects and UKCIS Macroprofiles are discipline-oriented subsets of Chemical Abstracts designed to meet the needs of individuals requiring rapid alerts to items of immediate interest to them. They are not intended to replace Chemical Abstracts held in libraries and information sections but to offer a means of putting references and abstracts back on the laboratory and office shelf close to those who should make use of them.

LITERATURE CITED

(1) F. H. Barker, D. C. Veal, and B. K. Wyatt, Report on the Evaluation of an Experimental Computer-Based Current Awareness Service for Chemists, OSTI Report No. 5079, National Lending Library, Boston Spa, Yorks, 1969.