

AN ORIGINAL CREATION OF A RETROSPECTIVE RESEARCH SERVICE AT THE UNIVERSITY OF AIX-MARSEILLE

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Abstract: This paper deals with the creation, in France, of a group dependent on academic institutions (University and C.N.R.S. French National Research Center) involved in the field of computed retrospective researches. This creation is original because it is not done in the traditional libraries structure and the group does not receive any special subsidies. The center's activities are described here and the questions asked by various users are analyzed in two ways : the classical bibliography research ; the non-bibliography research, basically founded on the needs of the french academic research institutions. Then, the different facts that helped to the success of this creation are shown and the main points are analyzed. As a conclusion the authors give some simple rules about the implantation of a computed retrospective research center in a minor interested and sometimes hostile environment.

1 INTRODUCTION

These last years, the online retrospective research in France has not reached the expected development. The fast characterized expansion of this technique was important in industry only with the creation of user groups, such as the "Groupe Marceau" or the "Club de Rueil".

At the same time, some university libraries were equipped with terminal (heavy terminal with screen). But, even then, the development stayed at a low level, although the cost of online searches was cut down by state subsidies. In fact, only a few people used this technique to improve their laboratory research.

The present paper deals with the creation, by university research workers and besides the administrative regulation, of a Center of Retrospective Research in the area of Marseille-Aix-Toulon-Avignon. Moreover, this region was not at that time (and even now) officially equipped with online information centers.

2 THE STARTING POINT

At the beginning, the situation, without any particular

reference to our geographic area, can be summarized easily: university and research people did not even know about the existence of online information systems (content, files, operation,...). In fact, this situation was not abnormal since no promotional efforts and no introductory sessions were made in any of the french universities and research centers.

Then, in 1975-1976, we found ourselves interested in this new bibliographic approach, and, with the help of industry (BP and RPI) we were able to follow several demonstrations and see how a terminal worked. We then decided to purchase our own (Silent 700 Texas Instrument) and to develop at a fundamental research level, the use of online information systems.

But, to do so, we first had to solve an important problem: how to acquire a high level formation in this field ?

To solve this problem, we first visited several industrial documentation centers, attended several basic courses in Paris (Association Française pour le Développement de l'Information en Chimie) and, at the end, with the specialists of S.D.C., we used the technique of "at-home" sessions. (workshop with L.M.S. was also attempted in London) . At the present time, we are working jointly with the "Centre National pour l'Information Chimique"-C.N.I.C.- and are invited to their meetings.

But, we realized that the use of online systems necessarily implied a continuous training. It was then important to find some permanent financial support for our group. We chose to create, at the University of Laws, Economy and Sciences of Aix-Marseille, a service of retrospective research which would work on a self-management basis, without subsidies.

2 PROMOTION AND INTRODUCTION OF ONLINE INFORMATION SYSTEMS

Our first aim, to ensure an adequate expansion of this service, was to send to several laboratories and group of research workers a general stimulating publicity. But the result was completely negative and the analysis of this fact showed that the academic institutions were not sufficiently prepared to receive the informations.

We were, therefore, obliged to use a different approach based on the fact that the people in charge of the service of retrospective research were active and knowledgeable in the field of fundamental research (all the people in charge are PhDs and Engineers). For this purpose, we got in contact with the heads of several laboratories and asked them if they would like to follow an "on-spot" conference on the use and capabilities of online retrospective systems. The conference would be followed by a demonstration consisting of a bibliography made on a subject suggested by the laboratory people (that is to say a subject of their own research). The only constraint would be the cost which would have to be met by the laboratory asking for it.

At the beginning, this approach was successful and allowed us to rapidly increase the number of users. Besides, following the good results obtained, we were asked by several professors to present the same introductory course to advanced students (in very different fields, and for people coming from

universities, C.N.R.S., Engineering schools, etc....). Thus, within one year, more than 100 hours of teaching were instructed in the area of Aix-Marseille.

In table 1, we describe these different actions, ranging from chemistry to psychology, which brought us to assume locally the professional training of the research workers of the Centre National de la Recherche Scientifique - C.N.R.S.-

Therefore, as we found ourselves obliged to extend our activities in order to assume the material bases of our group, we have analyzed the ways in which the capabilities of online information systems can be used on a wider scale, especially in french academic institutions.

Taking into account the target to be reached, this analysis if well made, will make a good presentation and allow a good understanding. If this main point is achieved, the number of users will increase immediately.

4 FROM CLASSICAL BIBLIOGRAPHY TO NON-CONVENTIONAL STUDY

In this chapter, we will distinguish three levels :

- interrogation time and files used,
- classical studies,
- non conventional studies.

a - interrogation time and files used :

In one year, the distribution of the questions is as follows:

Private industry = 35% Public Institutions = 65%

The details are shown in table 2 and it is possible to note several points : ORBIT seems a good support for teaching, since the formulations are very simple. The questions are short because of the cost, the good preparation and a good knowledge of the problems arising in fundamental research.

b - classical studies :

They were mainly bibliographies on fundamental research subjects (Theses,) or state sponsored contracts. It is noticeable that fundamentalists rarely consult the patent file, even if their subject is already fully described in them. In the field of classical questions, it seems very important to insist on a significant fact : a good formulation of the subject induces necessarily a personal interaction and the discussion will be better if the people in charge of the search strategy have a scientific background equivalent to the one of the person asking the question. In fact, at the beginning, it is symptomatic to see that a search made with only the key-words and the concepts of a non-trained person leads to a reference batch which includes generally 70% or more of its own work only.

Another important problem is the cost (especially in Europe where the telephone costs with the U.S.A. are high). If, for large private compagnies the cost of the telephone and the files is negligible, this is not the case for universities and C.N.R.S. groups. Therefore, it was necessary for us to change in a certain way, the classical strategies to find a good compromise between the cost of offline prints, and the time spent on the file to refine the subject. Besides, a rigorous preparation of the question is necessary and very often it is not easy to know exactly what the user wants and what sort of information he

needs. Therefore, the "save" procedures are recommended even if the results are not optimum with respect to the structure of the different files used.

But, it is also encouraging to note that, when the product of online research has been analyzed and when all the refinements of the method are discerned, the problem of the cost is no longer a barrier.

c - non-classical studies :

They are very often based on the rules which govern the academic institutions and people's careers. They are also closely related to the search for contracts and sponsors. But it is in the browsing and heuristic methods, which imply a good knowledge of fundamental research processes, that our action is expanding. In fact, the rapid access to information will lead to some extent to innovation processes, and in this field we have acted as advisor on several occasions.

Among the different studies realized, we can present:

- citations indices = international impact of a research group,

- subject evaluation = the number of references or patents published every year, and the determination (% of the total amount) of a research group production seem to be a good indicator index :

i-to determine the threshold potential of the group in a given field (in number of persons and money involved, this is related to journal impact and average number of people per paper),

ii-to forecast, for instance, in the next 2 years, the trend of the subject and to see what place the group will have at a national or international level,

iii-other indicators are the number of national patents in the field, the geographical area of research, the main laboratories, the techniques used,

In figure 3, an example of the evaluation of a subject is given in the field of phase transfer catalysis (the group analyzed being our own research team), and it is easy to see that in 1980-1981, the contribution of the group will be very weak and become less significant, as also expected. We will then be obliged to re-analyze the subject and to decide whether we will continue in this direction or not and if yes, in what conditions.

- change of subjects = they are often induced by circumstances and they can be partly rationalized by using online information systems. It is possible, when a subject is chosen (and before the final choice), to investigate all the implications for the research team (number of publications, patents investment threshold compared with what will be done in the team, techniques used in the field, state and prospect at the national level,).

- soft bibliography = most of the research workers are well aware of the main papers published in their field (hard bibliographic concept). But, all the applications and uses of their knowledge in other fields than fundamental research are very often unknown. This is for instance, the case of areas such as

economy, patents, food, drugs, etc... It is in these cases that tailor-made files are of the greatest interest because they allow people to have a better view of their subject in order to give them a broader knowledge of their field, which would be impossible to obtain manually.

- Other studies are also possible, and currently, one example is the improvement of the files which take into account the structural formula of a molecule and at the same time the classical abstract references (such as CBAC from Chemical Abstracts and the D.A.R.C. system). In France, the DARC-CBAC file was created and improved by Professor J.E.DUBOIS and is in operation since October 1979 near Nice at Sophia-Antipolis. Such a file provides a great tool to assist the thoughts of people, especially when they have a good practice of a reaction (substitution on a sulfur atom for instance) or when they have the opportunity to synthesize a substrate with good reactive position (the position will be left open in the structural research mode). Table 4 gives an example of such a search.

5 CONCLUSION

The instantaneous use of more than 10 years of human knowledge constitutes nowadays a new fact and in the area of fundamental research it will surely produce major innovation factors.

But, before, several problems will have to be solved :

- psychological : the shift from the simple encyclopaedia knowledge to the ability to understand how to detect and to work in areas of research which will not get obsolete or useless.

- price : what must be the cost of information compared with the value of other laboratory machines or reagents. Are scientists aware of it ?

- education : the transitional phase (today). The use of online systems will expand rapidly only if the users are able to understand and are conscious of the superiority of this method.

Finally, we would like to stress that a non-rational use of these information systems should allow a faster improvement of innovation. But, this will be only of benefit to people who are not fully engaged in them and who carry on working in research laboratory (in close contact with fundamental problems or results). This window, open on the world of sciences, statistics and their applications, will, in the long run, provide people with the necessary mobility of thought which is becoming more and more necessary to solve the questions arising in our modern world.

table 1

List of the different introductory courses.

students or research workers	number of sessions	time (hrs)
Institut Universitaire de technologie	2	6
Maîtrise	5	15
D.E.A. (Université)	1	3
<u>Engineering schools</u>	5	15
Arts et Métiers Aix		
Chemistry		
Physic		
Petroleochemistry		
<u>Research</u>	10	30
Chemistry, Biology, Marine chemistry and biology		
Physic, Medecine, Pharmacie		
<u>Miscellaneous</u>	3	9
Chemistry board of university 3		
University of Medecine		
University of laws		
<u>private</u>	7	21
chemistry, security, Documentation, Physic, ...		
<u>Libraries</u>	4	12
C.N.R.S., Institute of micro-calorimetry, Universities, Molecular Biology		
total	37	111 hrs.

all the different places were located in the aera of Aix - Marseille. Only two of them were in Avignon, and one in Toulon. some very simple documents were prepared for the sessions, they mainly present a chronology of the online information systems.

table 2

Main files used for one year (hrs)

files	S.D.C.	L.M.S.
Chemical Abstracts	21.01	
Agricola	0.6	
E.R.I.C.	0.44	0.04
BIOSIS	3.16	
C.D.I.	1.45	
C.I.N.	0.84	
energyline	0.03	
enviroline	0.42	
CONF.	0.04	
F.S.T.A.	0.28	
INSPEC	0.60	
N.T.I.S.	1.36	
oceanic	0.23	
pollution	0.88	
psychabs	0.44	
safety	0.16	
paperchem	0.06	
chemdex	0.15	
Derwent	8.68	
metadex		0.101
excerpta medica		1.06
patent concordance		0.269
scisearch		3.886
CA condensates		0.226
new chem.		0.174
C.A.B.		0.221
predicast		0.475
chemname		0.040
RAPRA		0.401
A.S.I.	0.20	
libcon	0.30	
S.S.C.I.	0.38	
total	41.71	6.890

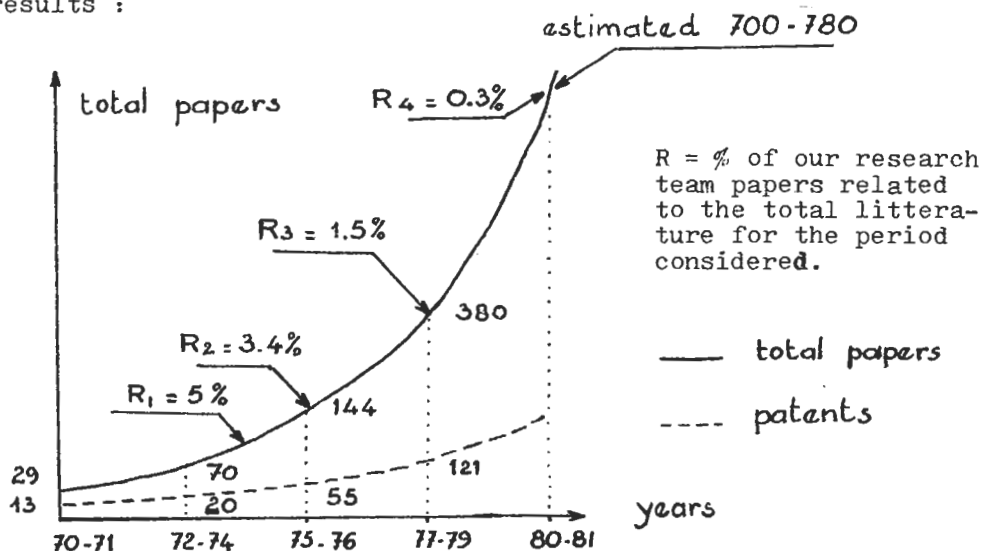
figure 3

Evaluation of Phase Transfer Catalysis
(and related topics)

files used : CAS77 - CAS72-76 - Chem70-71

descriptors : phase transfer cataly:
triphase cataly:
quaternary ammonium cataly:
biphase quaternary ammonium
phosphonium cataly:
onium salt* cataly:

results :



R_3 is in good agreement if compare to the results obtained from:
"compendium of phase-transfer reactions and related synthetic
methods" Walter E.Keller editor. 1979 copyright Fluka AG.

$R_4 = 0.3\%$ is for us a "côte d'alerte" and a good indicator which
significantly show that before 1981 we have to reconsider
carefully our subject.

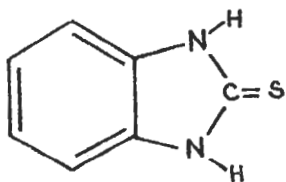
table 4

How many compounds of the benzimidazole type structure have been synthesized and used in biological studies, from 1966 to 1977. The only constraint is to have only hydrogen atoms on the nitrogens.

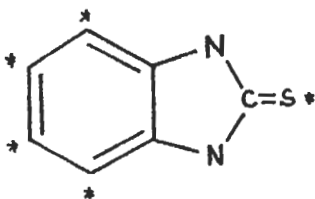
file used :

DARC-CBAC with the courtesy of J.E.DUBOIS, BONNET and GRUSON.

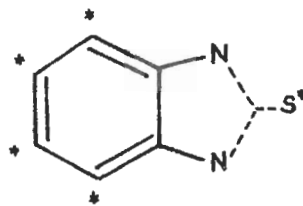
formulation of the question :



the basic structure



the open positions *



the final formulations (tautomeric)

the question can be introduced in alphanumeric or graphic modes.

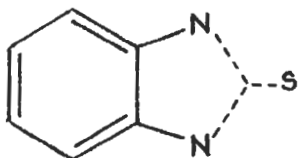
the answers :

- there are 68 structures which have been studied and published. they are characterized by the 68 registry numbers:
000583391-003042000-004929526-...039225291-.....063697654 .
n°1 2 3 40 68

- work can then be carried out on the 68 RN : classical with questioning and combinations, structural with the obtention directly drawn (hard copy) of the selected structures.

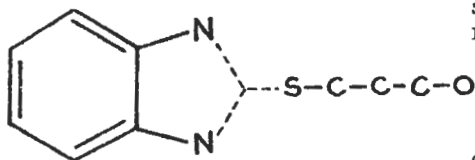
examples :

RN = 000583391 n°1



Centrally acting cyclic urea, thio-ourea, and their N,N'-dialkyl derivatives. Structure-activity correlations.
Lien Eric, Hussain Mehdi
JMCMAR, 14, 1971, 138

RN = 063697654 n°68



allow to work first with the structures and after with references.

other reference formats and abstracts are available.