AGRIS 1968-1994: Insights and Lessons

A personal memoir

By

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AGRIS (The International Information System for the Agricultural Sciences and Technology) was created in 1974 by the Food and Agriculture Organization of the United Nations (FAO) to facilitate information exchange and provide bibliographic control of the world literature dealing with all aspects of agriculture. AGRIS is a cooperative system in which participating countries input references and abstracts to the literature produced within their boundaries and, in return, draw on the information provided by the other participants. To date, 240 national, international and inter-governmental centers participate. A full review of current services and facilities is available at http://www.fao.org/agris. AGRIS was an early (only the second) implementation of the "international cooperative information system" concept and as such both its successes and failures deserve further study. While this is a 'personal memoir' and does not attempt to present an objective, academic history of the subject, it is my hope that it can provide input for such a study. In particular, it attempts to record and analyze some of the facts dealing with the birth and evolution of this pioneering effort and provide some insights that will be helpful for the future.

Very few innovations in human history spring into existence *ex nihilo*, almost all are based on precedents. The case of AGRIS is no different: while it is based on a century and a half of the development of scientific documentation its immediate precursor was INIS (International Nuclear Information System (INIS), the first attempt to implement the concept of the international cooperative information system. Thus, in order to understand the history of Agris it is necessary to start with the history of INIS. The following is an official history of INIS taken from the official history of IAEA ("HISTORY OF THE INTERNATIONAL ATOMIC ENERGY AGENCY") The First Forty Years, by David Fischer A fortieth anniversary publication.[1]

> In the second half of the 1960s, the IAEA launched the International Nuclear Information System (INIS), a major project to promote the exchange of information on all aspects of the peaceful uses of nuclear energy. The birth of the project was not easy. Western members of the Board of Governors had access to a wide range of nuclear science and technology information in, for instance, the Nuclear Science Abstracts published by the US Atomic Energy and in the services provided by the NEA such as its nuclear data centre. There was, at first, a Cold War reluctance to proceed to a comprehensive exchange of nuclear information with the Soviet Union and its allies. One Governor went so far as to suggest that pieces of information should be exchanged initially on a one-for-one basis with the USSR![2] Much of the

[1] http://www-pub.iaea.org/MTCD/publications/PDF/Pub1032_web.pdf).

[2] This arrangement was implemented and the U.S. and Soviet Union exchanged a limited number (10 monthly at one point) of documents. (AIL)

credit for overcoming these obstacles must go to the Canadian Director of the Division of Scientific and Technical Information and his US successor.[3]

As early as 1962, a panel of experts had recommended that the IAEA should help UNESCO's efforts to encourage R&D on "mechanizing [the] storage and retrieval of information, and the broader study of science abstracting...at the international level." In 1965, Soviet and US experts outlined a scheme for an international information system to cover the expanding flow of literature on the peaceful uses of nuclear energy and to meet the information needs of countries at different levels of development and different backgrounds and traditions in the techniques of information handling. The IAEA convened a number of panels of experts to review the consultants' proposals and to elaborate a detailed design for the system. In 1968, an international team of experts made a detailed study of the system and drew up a report to the Board. The system was designed to provide machine processed data on the particular nuclear topic that a user selected. It is decentralized in the sense that each participating State is responsible for preparing and arranging the input of all literature relating to the peaceful uses of nuclear energy that is published or becomes available in that State. The IAEA arranges for the input of material that it and other international organizations produce. Each participating State designates a central point to handle all input. A national INIS Liaison Officer is in charge of the operation. The centre is responsible for limited processing of the input such as the recording on computer tape of bibliographical descriptions and key words. The IAEA processes incoming material, stores it and distributes it to participating States and individual users. The products of INIS consist of magnetic tapes or a printed bulletin (INIS Atomindex) containing bibliographic descriptions and key words, as well as cumulative indexes and microfiches with abstracts or complete texts. In February 1969, the Board gave the green light for the establishment of INIS but imposed restrictions that would enable it to control the growth and cost of the system. INIS began its output in April/May 1970, distributing INIS Atomindex, computer tapes and microfiches covering the literature already reported to it.

In 1972, the Board decided that the scope of INIS should henceforth cover all nuclear science information. By the mid-1970s, 35 countries had agreed to take part in INIS, thus ensuring that the system would be able to cover at least 90% of the sources of the world's nuclear publications.18 In 1974–1976, INIS reached a steady level of operation, processing 60 000–70 000 citations per year. With the demise of the US Nuclear Science Abstracts in July 1976,[4] INIS became the world's only abstracting service on nuclear energy and the only system with worldwide coverage of nuclear literature. In the late 1970s and 1980s, INIS began providing a completely computerized information service, offering direct on-line access to many Member States and organizations. In the early 1990s, the INIS database began to be available on CD-ROM as well as on-line and in print. INIS served as a model for other information systems such as UNISIST, a worldwide science information system developed by UNESCO, and for AGRIS, a similar system covering food and agriculture, operated by FAO in co-operation with the IAEA. By 1995, when INIS celebrated its 25th birthday, 94 States and 17 international organizations were participating in the system and the INIS database had grown to over 1.8 million references to nuclear literature, and was expanding at the rate of about 80 000 references each year. The 'INIS Clearinghouse' had microfilmed the full texts of more than 345 000 documents of 'nonconventional' literature such as reports, proceedings of conferences, doctoral dissertations and laws. INIS also began the electronic storage of the full texts of non-conventional literature on CD-ROM.

[3] John Woolston and Edward Brunenkant respectively. (AIL)
[4] In planning for INIS it was the US government's intent that it replace Nuclear Science Abstracts.

As I already noted the history of AGRIS is intimately bound up with that of INIS. As a result of many of the same people being involved in the original design the two systems ended up sharing many of the same methodologies.[5] Therefore, in order to fully understand the development of AGRIS it is necessary to supplement the dry description of INIS with some further information regarding its development. In 1963, John Sherrod[6], Director of the Science and Technology Division of the Library of Congress, who had conceived the then revolutionary notion of the "international cooperative information system" but had a hard time explaining it to the scientific information community and convincing it of the validity of the concept, became a member of the staff of the Division of Technical Information of the U.S. Atomic Energy Commission (AEC). At that time the Commission published the main abstracting tool in English for nuclear literature. It attempted to cover the world's literature in its field. The IAEA history points out that the birth of INIS was not easy, in part because "Western members of the Board of Governors had access to a wide range of nuclear science and technology information in, for instance, the Nuclear Science Abstracts [(NSA)] published by the US Atomic Energy [Commission]." While it is true that the Western world had access to a very comprehensive abstracting service produced by the USAEC, this was not without its problems for the Americans. In order to produce the NSA the US had to have the source documents, and they were often difficult to obtain and/or were obtained very long after publication. In order to try to minimize this time lag, at least as far as Canadian literature was concerned, the AEC made an agreement with the Canadian Atomic Energy Authority at Chalk River for the Canadians to provide, on an experimental basis, abstracts of some of their own literature for inclusion in NSA. This experiment proved more successful than anticipated. Not only was the time delay minimized, but also many hitherto unknown publications were reported. This led the AEC to wonder: If it had not been getting all the relevant literature from Canada, a country with which it had excellent relations and shared a common border and common language, what must the situation be vis-à-vis countries with less favorable conditions. Consideration of this question brought Sherrod to hypothesize that an international system in which each country collected and abstracted its own information and submitted the data to a common pool would be an effective approach to dealing with the global proliferation of published information. Thus was born the idea of the international cooperative information system.

In the case of INIS implementation of the idea was relatively easy (the stress is on **relatively** because even with INIS it was not easy, it took several years of meetings, discussions and explanations) for several reasons:

(a) The sources of nuclear information were almost all government controlled so that only a single decision to cooperate was necessary per country;
(b) the political climate was right, with both sides of the iron curtain feeling the need for whatever information was available from the other side.[7] The US and

[5] A good example of this results from the fact that FAO was unable or unable to provide the computer capability needed by AGRIS. Thus IAEA was approached to fill this need, which resulted in both systems using the same computer software without any determination being made as to whether other software might be more appropriate.
[6] I note with sadness that John Sherrod died in July, 2004, during the period that this was being written.
[7] This was very noticeable to me as the American representative at the December, 1967 meeting called to adopt the recommendations of August, 1967 Working Group meeting.

USSR were anxious to have the recommendations accepted as proposed and what anyone else wanted did not matter, and

(c) there was a UN organization willing and ready to assume responsibility for the coordination and the centralized operations that even a decentralized system requires.

However, the difficulties were overcome and INIS was successfully established. In February, 1968 John Sherrod and I transferred from the AEC to the U.S. National Agricultural Library (NAL) as Director and Deputy Director responsible for Technical Operations (in contrast to reader services) respectively. We brought the experience we had with INIS to bear on the NAL and on the provision of agricultural bibliographic information globally. However, it was immediately apparent that there were major differences between the disciplines in content, sources and targets of the information as well as organizationally. A new study and system design would be required if a successful agricultural information system was to be launched. A working group on which NAL, the CAB, the FAO and the European Community were represented was set up under the chairmanship of Herbert Coblans.

In 1968 the major English language agricultural bibliographic tools were (a) the National Agricultural Library Catalog; (b) the Bibliography of Agriculture (published by NAL)[8] and (c) the series of abstracting journals covering many aspects of agriculture published by the Commonwealth Agricultural Bureaux in England. In addition, there were more than 700 secondary (abstracting/indexing) services in agriculture with a duplication factor of 7-9 (this means that each primary document was referenced 7-9 times in the secondary literature).[9] In 1968 agricultural researchers in the US relied on the CAB as the largest agricultural abstracting service. We at NAL, who were responsible to assure the uninterrupted flow of information to the research community, had reason to suspect that the CAB was having financial difficulties and might have to discontinue some or all of its bibliographic activities. This was a factor that played an important part in our seeking alternative solutions including, of course, the international approach on the INIS pattern. In 1970, after a number of meetings with officials at FAO and with Sir Thomas Scrivenor,[10] the Secretary (equivalent to Director-General) of the CAB, The FAO set up an "Ad Hoc Study Group to Propose Possible Frameworks for an Improved World-wide Agricultural Information System".[11]

The participation of the CAB and the FAO in the Study Group (and subsequently in other aspects of the development of the system) was less than enthusiastic. While the CAB was a not-for-profit organization it did have its own products which it marketed

[8] This parallels the situation in AEC in which the US government was responsible for producing the major bibliographic tool. There were also budgetary considerations: while NAL was responsible for the total costs of producing the BofA, including printing, NAL received none of the income from sales of the publication.

[9] Boyle PJ and Buntrock H. Survey of the world agricultural documentation services. Luxembourg, CEC; Rome, FAO, 1973. FAO/AGRIS 6. Cited in: Lebowitz AI. AGRIS 1975-1980: A proposal for an integrated information system. Rome, FAO, 1974. FAO/AGRIS 17.

[10] Israelis might be interested to know that he was District Officer in the Tel Aviv area until the end of the British mandate.

[11] The work of the Study Group was reported back in: Coblans, H. Study Group Coordinator. Report [of the] Ad Hoc Study Group on an International Information System for the Agricultural Sciences to the Chairman of the FAO Panel of Experts. 8 July 1970.

aggressively in order to provide much needed income. It was not looking to build up a competing system. In contrast to the IAEA, which was a relatively new UN agency and was looking to expand its mission, the FAO was an old line UN agency with a fully developed program. The addition of new activities, especially those which would require budgeting, was of no great interest. However, under US and Canadian pressure[12] both organizations did participate.

Another major difference lay in the nature and sources of the information to be included. Nuclear information, on the whole, was developed in research organizations funded and, because of the sensitive nature of the subject, controlled by central governments. It was published in a relatively few languages and was intended for a small audience of scientists and engineers. There were very few indexing and abstracting services in the field and their distribution was also limited. In agriculture, on the other hand, almost anyone with a few square meters of land and/or a primitive laboratory could engage in agricultural research. In many cases the research results were of limited relevance outside the area in which they were obtained though they could be of interest where similar agricultural, geological and meteorological conditions prevailed. In many cases the people engaged in agricultural and, even more so, the people who had to use the results, were monolingual. As a result of these conditions a large number of bibliographic tools developed in agriculture. A system which did not take these into account would not be feasible.

Basically, the Study Group concluded that in order to meet the political as well as technical requirements of a system to serve the multi-faceted agricultural research community a complex, multi-level system was required. Level I would consist of a vast inventory of agricultural publications while Level II would consist of a complex network of subject oriented information services. In the simplest model each country would submit bibliographic citations to the inventory. Level II services, including the 700 existing information services, would scan this inventory and draw relevant citations from it to use as the basis of their specialized information services. The Level II services themselves would be organized into sub-networks, such as AGRIS Forestry. Though much effort was put into the development of the two level concept it was never really implemented successfully.

The first recommendation of the Study Group was:

> The implementation of a Level I service should be considered a priority for international action. It raises no serious technical problems, as it would meet a widespread need and could be created fairly quickly.[13]

Little did we know when we drafted this recommendation how difficult it would be to establish an effective Level I service. A large part of the problem lay in the call for 'international action'. When the Study Group was set up, and even before it held its first meeting, it was understood by everyone involved that the goal of the exercise was to recommend a system that would be operated by FAO, just as its precursor, INIS, was operated by the IAEA. As already noted, one of the problems resulted from the FAO's reluctance to add new programs to its already strained budget.

[12] The Canadian pressure originated with IDRC (The International Development Research Center, a unit of Canada's foreign aid program) whose information related activities were headed by John Woolston.

[13] Study Group report. Page 9.

Another resulted from the nature of the FAO structure itself in relation to the AGRIS proposal, specifically the proposed subject scope.

The FAO consists of a number of semi-autonomous departments, *e.g*. agriculture, forestry and fisheries.[14] The technical departments each had its own constituency within the Member States which lobbied for resources for the department, both within the member state and within FAO, and which expected to receive services from it. (It should be noted that AGRIS, which was assigned to the Department of General Affairs and Information (GI) was not the beneficiary of much lobbying. Its constituency within the member states was not nearly as powerful as were those of forestry and fisheries, for example. Unfortunately, at the time that AGRIS was established there was no FAO division dedicated to agricultural research as such. Had there been it would have been the natural home for AGRIS rather than GI.) The technical departments, particularly agriculture, forestry and fisheries had established relationships with the secondary information services which served their constituencies: agriculture and forestry with CAB and fisheries with ASFA. The proposed new information service, whose subject scope, 'agricultural sciences' was defined by the Panel of Experts[15] was quoted by the Study Group as:

> It was agreed that the denomination "agricultural sciences" should include "food" as well as technology but should exclude "extension work".16 The [Study] Group has interpreted this to mean that "fisheries" and "forestry" are to be covered, and in addition the literature of economics and sociology, administrative organization (especially law) insofar as there is a direct relationship with agriculture.

AGRIS was perceived as a threat to these relationships, even though the services with which they were maintained did not meet what should have been FAO goals. Both CAB and ASFA, for example, were English language services and less than ideal for users in non-English speaking countries. This undercurrent of hostility to AGRIS, particularly in Forestry and Fisheries was very evident to me when I joined AGRIS in 1979[17]. It came to a head in 1988 when the Fisheries Department hired John Woolston "to act as Consultant to the Fisheries Department to review FAO's experience with ASFA, evaluate it and make recommendations for its further development." Basically, Woolston recommended that FAO set up a system analogous to AGRIS but dealing specifically with fisheries. It is clear that in recommending a separate system for fisheries information Woolston was parroting the wishes of the Fisheries Department

[14] Today the FAO consists of the Departments of Administration and finance, Agriculture, Economic and social, Fisheries, Forestry, General affairs and information, Sustainable development and Technical cooperation. The last two departments were not in existence at the time described in this paper.
[15] A group of directors of major agricultural information services was set up to advise the Director General of FAO. It was the parent body of the Study Group.
[16] AGRIS later interpreted this to mean that documents dealing with the methodology, practice, evaluation, etc. of extension work were to be included but actual extension documents were not.
[17] I recall a meeting at which the person nominally responsible for information in the Fisheries Department stated that the best use of AGRIS bibliographies was to put them on chairs so that small children would be able to reach the table. However, in all fairness it should be noted that this was just after I joined the AGRIS team and AGRIS had no abstracts whereas ASFA did.

which wished to have a fisheries information system of its own, independent of AGRIS.[18]

When AGRIS was set up, with the enthusiastic support of John Sherrod who, as Director of NAL, was able to obtain the support of the U.S. Department of Agriculture, the FAO was more or less coerced into taking AGRIS on. However, when Sherrod left FAO that support was seriously curtailed, especially since his successor at NAL did not support the AGRIS concept.[19,20] The agriculture ministries of the British Commonwealth countries[21] which were members of CAB and contributed to its support tacitly opposed the development of AGRIS though the would never actually say so.

Another problem resulting from the "unavoidable"[22] choice of FAO as the international host organization for AGRIS was the choice of GI (General Affairs and Information Department) as the appropriate department within FAO to host this new activity. Locating it there, rather than in one of the technical departments (agriculture or even the economic and social department) meant that the technical departments viewed it as part of 'administration', a support service in which they had little interest. Since they had little or no input into the design or operation of the system they had little interest in it. Even when areas of cooperation were suggested[23] the technical departments showed little or no interest. The blame, however, cannot be laid entirely on the technical departments. One of the problems of GIL was that during most of the period its director was chosen to meet political commitments of FAO.[24] The result was that they provided

[18] Actually, my suspicions at the time were that they were looking for a decision in principle to become independent of AGRIS but would then recommend that the fisheries information system be outsourced to ASFA. While it is true that outsourcing meant that the system was not paid for by FAO and that FAO staff were not involved on the operational level, in the case of ASFA it also meant that control was vested in a strictly profit oriented organization. While this is not necessarily a bad thing, it certainly meant that services to developing countries in terms of coverage, dissemination and training would be severely limited.

[19] In early 1970 the US proposed me for the post of Director of GIL (Library and Documentation Systems) the FAO Division in which AGRIS was located.

[20] By the summer of 1975, the year that AGRIS became operational, the situation between FAO/AGRIS and NAL became so bad that I (then working in Ben Gurion University in Beer Sheva) was invited by FAO to visit NAL in the company of the late Nicolae Dumitrescu, Director tof GIL, and Harry East who was in charge of AGRIS, in order to try and mediate between them.

[21] Notably the UK itself, Canada and Australia.

[22] Perhaps not unavoidable. I later thought that had the US approached CAB with the suggestion that it host the AGRIS system many problems might have been avoided. While there would have undoubtedly been many obstacles, such as how to gain the approval of the Commonwealth countries who considered themselves owners of the CAB and how to arrange international funding, the fact that the new system would be based on an existing widely accepted one, might well have justified this approach. I studied their requirements and then I proposed that perhaps it would be possible to "internationalize" the BLLD, possibly under the aegis of UNESCO, so that it could provide a truly global service without the need to duplicate its collections and facilities.

[23] Ruth Elazar who represented Israel at a number of AGRIS Technical Consultations proposed a number of ways in which data from AGRIS and other departments could be combined to produce outputs which would have been very useful to member states. While the Coordinating Center made considerable efforts to follow up on these suggestions it was never able to obtain the required cooperation of the technical departments.

[24] As far as I can figure out the two Romanian Directors from the early 1970s to the late 1980s were appointed on a political basis and had no experience in scientific information or library systems. Mr. Dumitrescu tried to provide an environment in which the system would develop and AGRIS was set up during his tenure.

no professional leadership and were not able to represent AGRIS effectively either within FAO or outside of it.

When considering the question of the constituency supporting AGRIS, which logically should consist of users who benefit from the system, one must differentiate between the 'real' and 'perceived' constituencies. In fact, the real beneficiaries of the system should be the scientists engaged in agricultural research and those agriculturists involved in bringing the research results to practical use. In fact, the AGRIS user group was perceived to be librarians and documentalists. FAO[25] did not have a Division of Scientific and Technical Information (as the IAEA did, for example), though at some point a Library and Documentation Systems Division (GIL) was established.[26] The FAO, like USDA before it, used the term 'Library'[27] in the name of its scientific information activity. However, in contrast to USDA where NAL was under the Assistant Secretary of Agriculture for Science and Education whereas in FAO GIL reported to the Assistant Director for General Affairs and Information. When a Research Division was established in FAO in the mid-1980s it would have been logical to transfer GIL to that framework, however that suggestion was also rejected.

AGRIS is a bibliographic system (with abstracts added at a later stage). Even before it was set up the FAO was developing a current research information system in which current research projects conducted in, or of relevance to developing countries would be listed. This was analogous to CRIS in USDA. However, in contrast to USDA in which CRIS was not part of the National Agricultural Library, CARIS was set in GIL.[28] While CARIS shared various methodologies with AGRIS it had its own coordinating center and its national, regional and international participating centers were not necessarily the same as those participating in AGRIS. It is important to note that during the early years of both systems no attempt was made to really integrate them or to produce integrated AGRIS/CARIS products and services. A further analysis of CARIS is beyond the scope of the present paper.

In 1974, while I was Director of Libraries at the Ben Gurion University of the Negev I was asked by FAO to conduct a study to "develop a model design for AGRIS Level II as an information processing and communication system drawing on the resources of existing systems." The following quotations (indented paragraphs) are taken from my report to FAO[29] interspersed with my comments on the evolution of the system over the years.

[25] Please note that the organizational setups described are those that were in effect in the 1970s and have changed since then.
[26] When the Library and Documentation Systems Division proposed that it be renamed the Division of Scientific and Technical Information the Information Division (which dealt with public relations and other non-technical information) objected to our use of the word 'information' in the name of our division.
[27] In the U.S. both the National Agricultural Library (NAL) and the National Library of Medicine (NLM) provided extensive information services. NAL not only produced the *National Agricultural Library Catalog* but the *Bibliography of Agriculture* as well. NLM is the home of *Medline*.
[28] I suspect that it was the establishment of CARIS which provided the impetus for adding 'documentation systems' to the name of the division.
[29] Lebowitz, A. AGRIS 1975-1980: A proposal for an integrated information system (FAO/AGRIS 17). Rome, FAO, Dec. 1974.

> Primary documents would be identified, collected and cataloged by national or regional input centers. Each of these centers would cover a given geographic area and would provide their input of bibliographic descriptions in accordance with AGRIS rules and in an acceptable form (e.g. magnetic tape, input sheets) to the AGRIS Coordinating Center. The AGRIS Coordinating Center would merge the output of the various centers on magnetic tape and would make copies of the merged tape available to each of the input centers. The AGRIS Coordinating Center would also make the bibliographic descriptions available in printed form (AGRINDEX).[30]

The activity described in the above paragraph was implemented as AGRIS Level 1 in 1975 and has remained the basis of AGRIS ever since. However, it did not meet the needs of the global agricultural research community and a number of improvements were introduced relating to indexing and abstracts were introduced. These will be discussed later. However, I did propose expanding the activities of the AGRIS Coordinating Center as follows:

> The AGRIS Coordinating Center would contract for the acquisition of selected portions of the large, commercially available data bases such as Chemical Abstracts, BIOSIS, COMPENDEX and CAB. Fair payment for the data provided, which should be based on the degree of subsequent utilization of the data, would be made in cash, in kind, or in a combination of both. Thus, to the extent that commercially available data bases can provide indexing and/or abstracts these would also be acquired.[31]

The theory was that the Level I system would ensure that the bibliographic citations were already in the system, having been rapidly provided by the national or regional input centers. These citations could then be provided to other secondary services in exchange for indexing and abstracts.[32] However, it was believed that it would not be economically or technically feasible to reconcile indexing provided from a variety of sources using a multitude of different indexing systems.[33] I also argued, both in 1974, before AGRIS became operational and in 1979 when I became responsible for running the AGRIS system, that without abstracts AGRIS would be doomed to failure. AGRIS never was able to truly compete in the agricultural information market because it did not include abstracts from the very beginning.[34] My reasoning was very simple and is what has justified the existence of scientific abstracting services since their inception. Since it is impossible to judge the potential utility of a publication from its bibliographic citation (titles are notoriously misleading and even in combination with the name(s) of the author(s) do not really tell the user whether the document will be helpful) users are not really interested in such references. This would be particularly true of AGRIS's target audience in developing countries where document delivery was problematical and more often than not involved spending limited and/or controlled foreign currency which is wasted if the document proves to be irrelevant or useless. While a scientist should not use information from an abstract

[30] My report, p. 3.
[31] My report p. 3.
[32] This idea was probably influence by the development of shared cataloging systems such as OCLC in the US.
[33] I actually thought that the "keyword with go-word list" indexing method which I introduced into the *Bibliography of Agriculture* in 1970 could be applied effectively in this situation.
[34] I remember making the same argument to Mr. E.J. Brunenkant, then the Director of Technical Information at the U.S. Atomic Energy Commission during the INIS planning stages.

without having access to the complete publication, he can more or less safely determine from the abstract that the publication is not relevant to his needs.

As AGRIS was initially implemented as Level I of the two-level model it did not include abstracts. When I became responsible for AGRIS in 1979 one of my first priorities was to include abstracts when available from national or regional AGRIS input centers. This became AGRIS policy (presumably via decision at an AGRIS Technical Consultation[35]) and the number of abstracts in AGRIS has consistently increased. By July, 1998 more than 15% of the citations submitted to AGRIS included abstracts.

The idea that abstracts could be acquired from commercial sources proved to be totally impractical in real life. Such services as CAB (as it was known then) and BIOSIS were unwilling to sell, much less give, their abstracts to AGRIS. As I understood it they felt that doing so would undermine their entire *raison d'être*, which was to sell information services to users. If they were to sell their abstracts to larger, more inclusive services, even if they could do so at a profit, users would no longer require their direct services. Their publishing activities would be curtailed and possibly eliminated. Once they lost their user base and became abstract factories the next step might be to replace them with other, cheaper, sources of abstracts. The CAB, in particular, posed a problem in this regard because of the relationships it had built up over many years with the countries of the British Commonwealth. During all the years that I was associated with AGRIS we made many efforts to develop cooperative agreements with the CAB. Except for their acting as a UK input center to AGRIS for UK bibliographic citations these efforts never resulted in anything positive. Only one secondary service in which the CAB was involved, the International Food Information Service (IFIS) under the leadership of Earnest Mann ever came close to a real cooperative arrangement, and even that was never actually finalized.

There was another problem, that of language which is intimately connected with that of indexing and retrieval. This, strangely enough, seems to be an appropriate place to talk about the target audience to which AGRIS was addressed. The original Study Group report on which AGRIS was based did not define the user population whom the system was intended to serve. It was, however, tacitly understood that it was to serve the agricultural (very broadly defined) research community. The term 'research community' was understood to include people actively engaged in agricultural research in academic, research station and similar formal environments. It might also be extended to include extension agents whose role it is to act as bridges between the research and farming communities. Specifically excluded were farmers, even though many today are quite capable from benefiting from access to primary scientific information.

When it was originally designed it was assumed that English would be the 'carrier language' of the system. In the 'Parameters' section[36] of the Study Group Report the

[35] During the period that I was with AGRIS (1979-94) Technical Consultations to which representatives of all FAO member States were invited were held biannually in Rome. As a rule the representative of a member State was drawn from the staff of the national input center. The regional centers as well as other relevant bodies were also invited to send participants or observers to the Technical Consultations.

[36] Page 3.

subject scope and coverage are discussed but no mention is made of language. However, in discussing Level I in the section headed 'Proposals for an I.I.S.A.S.' the report states:

> It was agreed that the carrier language should be English. Titles would be given in the original language (transliterated where necessary) and they would be translated into English as well, if not already in that language.

This approach might have been suitable for an information service serving a user group in which English was the *de facto* language of advanced education,[37] but it was counterproductive for agriculture. Many agricultural scientists are locally trained and have adequate materials in one of the other world languages including French, Spanish, Chinese and Arabic. This is even more true of agricultural extension workers. In the early days of AGRIS it was decided to develop *Agrovoc,* a multi-lingual indexing and retrieval thesaurus. This project, under the leadership of Don Leatherdale was sponsored by IDRC and many of the resources necessary for its successful completion were provided by the European Community. After its completion and implementation the indexes to the printed version of *Agrindex*, the principal AGRIS output product were based on *Agrovoc*. At that point the indexes were still produced only in English which I found disturbing as I felt that this limited their usability in many parts of the world such as Latin America and Francophone Africa. Specifically I felt that a person's ability to use information in an unfamiliar language was greater than his ability to find it.[38] I am happy to say that John Woolston, acting as an outside consultant, recommended that FAO produce three language versions (English, French and Spanish) of *Agrindex,* which we proceeded to do. In addition, when we included abstracts we included the appropriate language abstracts in their respective language versions. Approximately in 1981 considered the idea of including titles in all three languages (E, F, S) in the *Agrindex* citations. As we did not have the resources to translate the titles we also conducted an experiment with the European Community to see if we could use their machine translation software to translate the titles automatically. The software was very primitive at that point and the results, while entertaining,[39] were of no practical value.

I am writing this from the perspective of someone who retired as Head of what was then called the AGRIS/CARIS Coordinating Center more than ten years ago. At the time of my retirement I took up other interests and so I think I can look back today at our AGRIS activities and judge them fairly objectively. AGRIS tried, in the face of many problems to, to bring about the cooperation of many partners, often with conflicting interests, to achieve a common goal. One of the more interesting examples relates to the "cold war" environment prevailing at the time. For various reasons the Soviet Union was not a member of FAO and did not contribute to its budget. However, it did participate in the AGRIS system. In November, 1979 a joint INIS/AGRIS training seminar was held in Moscow for CMEA (Comecon) member states. The institute where the seminar was held was headed by Prof. Sumarakov. a son-in-law of Mikhail Suslov. I explained to Sumarakov that the SU was taking unfair

[37] Which was more or less true in the natural sciences.

[38] Among other factors was that a user's passive vocabulary, necessary to make some sense out of an abstract was often much larger than the active vocabulary needed to search for it. Even in a totally unfamiliar language a document might contain sufficient scientific nomenclature or technical drawings to enable the potential user to determine if he should take further steps to ascertain its content.

[39] While I don't remember specific examples there were many like the classic "the spirit was willing but the flesh was weak" translated as "the vodka was good but the meat was terrible".

advantage of the FAO because, while it provided input, it did not pay for the processing or the outputs which it received, and its share had to be covered by the other member states via their membership dues to FAO. Even though Sumarakov agreed to take this up with the appropriate authorities in the Soviet Union I could not follow through as I was ordered by the Director General of FAO to drop the matter as it was just part of the ongoing situation with the SU.[40] As I have already indicated there were other conflicting interests: private versus public interests and developing versus industrialized countries. AGRIS had to be, and was designed, so that the least affluent and least developed countries could contribute to, and benefit from it. On the other hand it had to meet the needs of members with sophisticated, computerized systems. It had to provide training on all levels without patronizing the less sophisticated while meeting the needs of the technologically advanced and to develop tools to this. In addition to the technical aspects it had to develop a participatory management structure that would be responsive to the needs of the members. In a great measure, and considering the limitations under which we worked, I believe we succeeded. We built a global "AGRIS family", which is how we (and by 'we' I mean all the participants) referred to ourselves. But it is also my feeling that we would have made substantially more progress in an ideal world in which AGRIS had really been allowed self-government, that is the ability to carry out the decisions and policies developed by the participants themselves,. Even so AGRIS laid the foundations for a vital and evolving system and I am happy and proud to have been part of it.

I think that an appropriate way to end this memoir would be to reference the reader to the excellent 2002 FAO document: *AGRIS - A strategy for an international network for information in agricultural sciences and technology within the WAICENT Framework* - available online.

Abraham I. Lebowitz - *a chemist, started his career in 1952 as a reference librarian at the U.S. Library of Congress. After various library posts he returned to the Library of Congress to undertake research in indexing systems and worked on the development of the indexing used by the National Referral Center for Science and Technology (a National Science Foundation project housed at the Library of Congress). As Deputy Librarian of the U.S. Atomic Energy Commission he developed a series of computer programs for the control of legislative information and library serial records, and participated in the introduction of computerized techniques in the production of 'Nuclear Science Abstracts' and in the design of INIS (International Nuclear Information System). Appointed Deputy Director of the U.S. National Agricultural he introduced new methodologies to the U.S. Bibliography of Agriculture and the NAL Catalog, as well as participating in the design of AGRIS. After then serving as Director of Libraries of the Technion, Israel Institute of Technology, and the Ben Gurion University he spent 15 years as Coordinator of AGRIS and, subsequently, also CARIS. While enjoying his retirement he still works part-time as research director in a small start-up company.*

[40] On another occasion Dr. Tyurnin, the Soviet AGRIS liaison officer, asked if I could get him some micro-computers to be used in the preparation of AGRIS input. At that time the export of computers from the USA to the SU was not legal and they thought that they could circumvent the American embargo. I was a bit nasty and told him that I thought that the world's other super power should be able to get its own computers