

DOCUMENTATION AND THE DEVELOPMENT OF A SUBJECT

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[A subject develops through team research. The general pattern of conducting team research is indicated by the Spiral of Scientific Method. It includes sensing of the problem, making a proposal, collecting of facts, interpreting of facts, and generalising facts to a few empirical principles. It also includes the application of fundamental laws seized through intuition by an exceptional man and laws deduced from them. A new cycle is started when some new facts turn up and not being reconcilable with the fundamental laws. This leads to further team research. Every stage in team research, except that of sensing the fundamental laws through intuition, requires pin-pointed, exhaustive, and expeditious documentation services of different kinds. The role of documentalist in this is very important. He should be a partner in team research. With effective documentation service, the development of a subject through team research will be not only productive but also quick.]

1 Documentation

Documentation is the service of bringing into use the nascent micro subjects by specialist readers pin-pointedly, exhaustively, and expeditiously. Documentation service may be done in different ways. It may be

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- 1 Serving with a frequently published advance documentation list for current awareness ;
- 2 Preparing abstracts on demand or in anticipation ;
- 3 Preparing reports of the state-of-art in a subject ;
- 4 Preparing trend reports ;
- 5 *Ad hoc* collection of data ; and
- 6 Preparing digests.

One who gives these services is called a 'Documentalist'. The kind of service given by the documentalist depends on the requirements of a specialist engaged in the research work.

2 Development of a Subject

A subject develops largely through team research. In order to exploit the research potential at various levels, the team consists of persons capable of different kinds of research—pure as well as applied research blended with *a priori*, pragmatic, and developmental research in productive way.

3 General Pattern of Development of a Subject

The general pattern of the development of a subject through team research may be described on the basis of the Spiral of Scientific Method. The diagram is given in the *Five laws of library science*. Ed 2. 1957. P 360. According to this Spiral, we can enumerate the following stages of development of a subject through research :—

- 1 Sensing the problems for research.
- 2 Experimentation and observation through primary senses (with or without the aid of instruments to extend the capacity of the primary senses) ; and collecting and recording of facts obtained.
- 3 Formulating empirical laws by Inductive Logic.
- 4 Seizing the fundamental laws through intuition.
- 5 Application of fundamental laws (or empirical laws) and deriving deduced laws.
- 6 Declaring the non-conformity of some new facts to the fundamental laws starting a new cycle.

4 Stage 1. Sensing the Problem

A problem to be pursued may be sensed in any one of the following three ways :

- 1 In the course of an investigation ;
- 2 In the course of discussion with colleagues ; or
- 3 While reading the work of peers.

41 SENSING IN THE COURSE OF INVESTIGATION

It is generally said that one experiment leads to a series of experiments. In other words, as we go on investigating, we are bound to sense a new problem requiring investigation. Let us say, the research worker writes down a rough draft of the problem he senses. He may thereafter pass this on to the documentalist, through a dialogue, for getting more information on the problem sensed. The documentalist may produce a documentation list, or a digest or

a state-of-art report for this purpose. This may help the research worker in making a decision to conduct experiment or not. This would not only avoid duplication of effort and conserve research potential but also helps in quickening the pace of the investigation on hand. It may also help in preserving the psychological tempo of the research workers. Otherwise, further progress in the experiment may be hindered for want of information.

42 DISCUSSION WITH COLLEAGUES

It is not infrequent that a new problem for investigation is sensed or the already sensed one is clarified by a discussion with colleagues. Such a discussion sparks off a new line of research leading to a directed cultivation of subject. In order to make the discussion fruitful and at peer level, it is necessary that each of the participants in the discussion is fully informed of the kind of research being investigated all over the world on the specific subject in question. For this purpose, the documentalist may produce a trend report on the subject, after a dialogue with the participants in the team research. He should also highlight the trend of research in numbral subjects of interest.

43. READING OF THE WORK OF PEERS

Very often a research worker's mind is triggered by reading about the work of his peers in the field. To keep such triggers alive, the documentalists will have to judiciously feed the relevant documents to the research workers. This has to be given in a most personal and individual way to each research worker. This goes a long way in making the work of the research worker more productive.

44 PROPOSAL FOR INVESTIGATION

After a problem is sensed, the research worker extrapolates (however subjectively it may be) within a frame work of available experience, the relationship of the know to the unknown. The documentalist should provide the research worker with documents containing information about similar problems. He may give a state-of-art report concerning it. He may also give documents containing evaluative views and opinions of other expert research workers on the problem. He should also provide documents suggesting the various modes of association, correlation, and extrapolation of related ideas. The information that the documentalist provides should not only be pin-pointed and exhaustive but also reliable. The lack of such a documentation service sometimes leads to unintended wasteful duplication of research efforts.

5 Stage 2 : Experimentation, Observation, and Collection of Facts

In Stage 2, the team works out a procedure and decides upon what observations are to be made, what data is to be collected, what equipment and personnel are to be employed in carrying out the experiment. The work is done with the aid of instruments of various degrees of powerfulness. Observations of the objects to be studied are made with or without experimental interference

and conditioning. There is progression towards particularisation and concretisation, and the facts collected are recorded. Here, the documentalist should furnish information not only of the facts directly related to the experiments on hand but also on the methods of conducting experiments and the various ways of observing, collecting, and recording of the data. The documentalist should almost become the information searching agent of the team doing research.

6 Stage 3. Formulation of Empirical Laws

After a large quantity of facts are collected, they are correlated, classified, generalised, and abstracted into a few general laws. This is purely an intellectual process done with the aid of inductive logic. New techniques of correlation and generalisation are being evolved. There are several kinds of calculus and statistical methods for this purpose. The research worker should be kept aware of the availability of such techniques so that he may at least take the help of the specialists in these techniques, if he cannot himself apply these techniques. The documentalist should also feed the research worker at an appropriate time any new results on the problem published in articles in periodicals and in technical reports. He should also endeavour to collect these documents from different agencies and present it in a sequence helpful to the research worker. The research worker should specify his requirements to the best of his ability, so that the documentalist may furnish the information required expeditiously. Judicious dialogue between the research worker and documentalist will save considerable time and tempo of the research team.

7 Stage 4. Seizing of Fundamental Laws

At this stage, the accumulated empirical laws are further inducted or "seized" with the aid of intuition functioning in an exceptional man, into a few fundamental laws. This stage actually is beyond team research. It is individual—only a particular state of an individual's mind. This does not form part of research. But it opens a flood-gate of problems needing them research. Here, the documentalist has no room except taking into cognizance, the existence of fundamental laws and help disseminating them among the research workers through effective documentation service.

8 Stage 5. Deduced Laws

The team of research workers should grasp the results of intuition functioning in an exceptional man and apply them to diverse fields. Deduced laws are derived with the aid of deductive logic and the progression is towards particularisation and concretisation. More new facts are collected and recorded. The deduced laws include one and all of the inducted empirical laws. The documentalist should provide documents expounding methods of application of fundamental laws. He should feed any new micro idea he feels has a bearing to the problem on hand. Many times, the fundamental laws of one discipline may be used for deriving deduced laws in some other alien subject. There-

fore, the documentalist will have to keep an eye on the micro documents on alien subjects.

91 Stage 7. Entering the Next Cycle

Research by different teams may lead to the accumulation of new empirical facts. So long as the deduced laws are empirically verified to be true and the new empirical facts are found to be in conformity to the implication of the fundamental laws, there is no further movement in the spiral; and the fundamental laws continue to be deemed helpful. But, this seldom holds good for long. Now and again contradiction between the new empirical facts of experience and the currently used fundamental laws comes to light, in spite of all possible precautions to ensure absence of faults and fallacies in the building of the facts of experience and in the inference of implications of the fundamental laws. Then the team will have to recognise the existence of a class of empirical facts and declare the incidence of a crisis in the application of scientific method. Then, the new class of empirical facts accumulated and again Stage 1 begins, and the cycle of research repeats. Thus, in Stage 6, the role of the documentalist is to inform the research worker continuously about the micro documents expounding new empirical facts about the subject of his interest at the moment. He should also bring to his notice any new invention in exegesis, observation, and experiments.

92 Role of the Documentalist

The preceding sections give a general description of team research. It is a continuous spectrum of different kinds of research. In practice, this may not be the exact sequence in which research proceeds. Different teams may be doing different kinds of research at different times. Their information needs also may differ. The documentalist should know about this. He should work as a partner in each research team, having the responsibility of bringing to the notice of other members of the team any information that is relevant to the subject of pursuit. For this purpose, a documentalist should

- 1 Maintain intimate contact with each research worker with a view to understand and keep up with their respective specific document and information requirements;
- 2 Select and procure the documents appropriate to meet the information requirements;
- 3 Develop such tools and techniques that would make the finding of the information contained in the documents pinpointed, exhaustive, and expeditious and economical;
- 4 Develop such tools and techniques to keep the readers continuously informed of the developments in their respective areas of research;
- 5 Make provision for the accessibility to the required documents within reasonable limits of economy; and
- 6 Ensure that the information provided to each reader is presented in a manner that makes its absorption and utilisation convenient with the least waste of time and effort.

From this it follows that the more fruitful will be the documentation service, if the documentalist has an adequate understanding of

- 1 The personality of each research worker ;
- 2 Their convenience in regard to the time of supply of the information ; and
- 3 The manner of presentation of information to suit different purposes (*See also* Sec 1).

Documentation, therefore, plays the role of a catalyst in the development of a subject by reducing to a minimum the wastage of the all too precious human resources for research.
