Information Seeking in the Newsroom. Application of the Cognitive Framework for Analysis of the Work Context.

Hannele Fabritius
Department of Information Studies
University of Tampere
lihafa@uta.fi

Introduction

We may argue that in most cases it is unclear, what exactly is the role of databases, or more generally, the role of the new technology in the journalistic practice. In this regard the new methods of information gathering are of special interest.

News writing has its own rules and assumptions which direct the work of the journalists. The same principles apply to a somewhat looser extent to all other types of journalistic items as well; for instance a feature piece can be written in a number of ways and styles, but regardless of the style it attempts to catch something important, relevant or essential. How are databases or digital information then used in journalistic item writing?

Databases are said to have at least two implications in journalistic work process. On the one hand, it is argued that electronic databases are going to revolutionise the editorial work and computer-assisted journalism is said to be the future of the art. On the other hand, it is claimed that databases have no significant effect on writing. Computer-assisted journalism is a more general term describing the use of a wide variety of software like spreadsheets, word processors, databases and so on. ([Koch 1991](#)). In textbooks of journalism the potential benefits of online searching for reporters and editors are hardly being mentioned. It has not been demonstrated how or in which way databases are to revolutionise journalistic work. Similarly, little is known about specific benefits and problems which systematically result from using databases for reporting.

One reason for the lack of systematic consideration on the effects of electronic databases on journalism may be the widely held but largely unexamined assumption that computer-assisted journalism utilising databases is just the same old journalism but with better tools. One may argue that the effect of using databases in the context of news writing, or journalistic work in general, is and will be minimal. It is assumed that databases will help the work of organising information and bringing data to the reporter, but changes will have no fundamental effect on journalistic work or on the structure of an item itself. ([Koch 1991](#))

A different matter altogether is, that technology effects shapes but the essence of journalism or other undertakings remains, as the Finnish journalist Pasi Karonen has noted. ([Fabritius & Karonen 1997](#))

Like in most other professions the use of information systems and information retrieval applications does not form the main goal of the work tasks of journalists; it takes a

minor and supporting role. However, information seeking is an essential element in the journalistic work.

The cognitive framework is, originally, intended to be a method for both analysing the work context and developing and evaluating the interactive retrieval systems. So far, this framework has been used to design and evaluate information retrieval systems in libraries and manufacturing companies (Goodstein and Mark Pejtersen 1989; Mark Pejtersen and Fidel 1998; Rasmussen, Mark Pejtersen and Goodstein 1994).

The purpose of this paper is to consider, whether the framework for work centred evaluation and design, developed by L.P. Goodstein, Annelise Mark Pejtersen and Jens Rasmussen, would be applicable for analysis of the information searching process, the journalistic item process and, finally, the journalistic practice in general.

Logically, the next step would be to consider, whether the digital information retrieval systems do support the journalistic work practice. This phase of evaluation, in case, would be conducted at a later stage and would possibly form a subject for another article. The subsequent topic would be to see, how well or badly the systems indeed do match the journalists´ resources and preferences. The results of this kind of analysis would be suggestions and recommendations as to how to develop and improve the interactive information retrieval systems so, that they may better serve the requirements of the journalists. The conduct of this direction, if any, would, as a matter of course, depend on the applicability of the cognitive framework in relation to the journalistic practice.

The following step would be to assess the appropriateness of the cognitive, work centred framework: how feasible it is in decribing or analysing the work context of the journalists.

However, it is as well important to evaluate the framework as a theoretical construction: which are the benefits and shortcomings of the cognitive framework itself, and how easy or difficult is it to apply.

Research Objectives

The purpose of the current study is to investigate, what is the role of digital information in journalistic writing, how the journalists utilise information technology and how well or badly the digital systems support journalistic work.

My ongoing, empirical research is guided by the principles of the grounded theory introduced by Glaser and Strauss (Strauss & Corbin, 1990). The approach of this study can be characterised as a user-oriented one but the journalists are taken primarily as producers, or doers, not only consumers, or users. From this point of view it is important to try to find out what the impact of the new, digital technology on the journalistic work is. The content of the term "new technology" is quite broad, including online databases, CD-ROM files, Internet resources like the World Wide Web, different search engines and e-mail. In the first place I am interested in in-house databases, because in the Finnish press it is obvious that in the near future the utilisation of the new methods in information gathering will increase, starting from the use of in-house databases -- called electronic archives, too.

The study focuses on two issues of interest; firstly, the journalistic work practice and the journalists´ information environment, and secondly, the role of digital information in news reporting, which is the main issue of the study. The research questions are as follows.

I. What kind of task is news reporting as a journalistic work process? What is the nature of the information environment of journalists? What

kinds of sources do the journalists use? Do they find these sources satisfactory? Which problems and barriers have they faced while using these sources, particularly digital information?

II. What is the role of digital information in the journalistic work; in particular, in covering the news events? What is the purpose of the search for digital information in preparing a particular piece of news or other journalistic item? How are the digital sources utilised? Is digital information replacing or complementing some traditional ways to seek information? If so, which sources are being replaced? What is the relationship between digital information and information acquired or sought from other sources?

The journalistic information searching behaviour is investigated by means of seven hierarchical concepts. When moving from general to more specific the concepts are: the journalistic culture, the medium´s culture, the department´s culture, the journalistic work practice, the journalistic item process, the information seeking and retrieval processes.

Data and Methods

The data was collected in Helsingin Sanomat, which is the largest newspaper in Finland, in 1996 and 1997. The research questions required application of several methods. The primary methods of data gathering were observation, interviews and diaries.

The observation conducted during the research can be defined as participant observation. In order to clarify the nature of the journalistic work practice and the journalistic culture, the journalists were requested to talk aloud during observation sessions. At the early stage of the study, the main purpose of the observation was to gain deeper understanding of the journalistic work practice.

The purpose of the interviews conducted at the initial stage was to focus on the issues that could not be answered through observation only. In the open-ended, active interviews the journalists were encouraged to offer their own point of view of the subjects under discussion: work processes, selection of the journalistic items, definitions of news criteria, information seeking and the use of digital information sources etc. Thirty journalists were interviewed. In order to gain contextual information also archivists and technical staff responsible for the information storage and he whole information management of the in-house databases and the training of journalists in the utilisation of the digital systems were interviewed.

A structured document as a diary of the journalistic item process was developed in order to study a journalistic item practice in detail. The term "journalistic item" refers to pieces of news, editorial articles and other journalistic texts. The journalists were asked to write down the headline of the journalistic item, the type of the item, the timing and how the idea for the item was got. The diary suggests a list of information sources. The journalists were asked to fill in the diaries, which sources they used, what was the purpose of the source, how important they estimated the source to be, and which were the greatest difficulties in using each source. Eighteen of thirty interviewed journalists agreed to fill in the diaries. The number of filled diaries was 250.

Data analysis was utilised at this stage of data collection. The printed pieces of news and other journalistic items were studied. Thereafter, the processes of news writing and information seeking, and especially the utilisation of digital information were discussed with journalists. The interviewing sessions concerning filled diaries were

repeated as many time as needed.

For the analysis various documents produced in the newspaper office were gathered, for example lists of work shifts and agendas of daily editorial meetings. In addition, photographs describing certain work situations were taken. The combination of methods varied and developed along the course of the field work, reflecting the ways in which the researcher managed to get a deeper understanding of the phenomena under study.

The Cognitive Framework for Analysis of the Work Context

L.P. Goodstein, Annelise Mark Pejtersen and Jens Rasmussen have introduced a framework to guide the definitions of boundary conditions that can be used in empirical evaluation studies. The framework for work centred evaluation and design can be used both analysing and evaluation and the approaches taken can be analytical or empirical. ([Mark Pejtersen & Rasmussen 1997, 6 -17](#); [Rasmussen, Mark Pejtersen and Goodstein 1994](#)).

Analysis of the work context is a top down process that begins with the analysis of the task domain and moves on to the user. Evaluation is a bottom up process that begins with the user and moves towards the broad work context. ([Mark Pejtersen and Fidel 1998, 4](#)).

I shall use the work centred framework to describe and analyse actual work situations of journalists. Concerning the journalistic work practice and information seeking, particularly, there are very few field studies using ethnographic approach and multiple, qualitative methods. In this paper it is my aim to evaluate the applicability of the cognitive framework of the work context for the description and analysis the work practice of journalists. Logically the next step would be to look at how the digital information storage and retrieval systems support the journalistic work context and whether the systems match the journalists´ resources and preferences. Although the next phase depends on the experiences from application of the work context part of the cognitive framework, it is reasonable or worth doing.

By analysing the work context I shall try to find answers for the first batch of the research questions regarding the context of the journalistic work and the journalists´ information environment. This has to be done before it is possible to find answers to the matter related to the role of digital information in the journalistic work and the use of the digital sources by the journalists in the work process.

The work domain, means - ends space

This dimension represents the landscape within which the work takes place. It serves to make explicit its goals, constraints which govern actors´ work activities, independent of particular situations and tasks. It identifies the functional elements and their means - ends relations. In other words it describes the productive resources that are available. ([Mark Pejtersen & Fidel 1998, 4](#); [Mark Pejtersen & Rasmussen 1997, 7](#))

The analysis of means and ends is structured at several levels of functional abstraction. These are:

- Goals and Constraints
- Priority
- General function
- Work process

- Physical resources

Activity analysis: task situation in domain terms

This level, or dimension, requires a means - ends analysis which is relevant for a particular task. ([Mark Pejtersen & Fidel 1998, 4-5](); [Mark Pejtersen & Rasmussen 1997, 7-8]())

Activity analysis: task situation decision terms (cognitive decisions)

This representation breaks down work activities into subroutines that can be related to the cognitive activities of the involved people and that serves to identify the cognitive tasks that are the targets for support systems. The information gained in this analysis will identify the knowledge items which are relevant for a particular decision task, together with the required information about their functional relationships. ([Mark Pejtersen & Fidel 1998, 6](); [Mark Pejtersen & Rasmussen 1997, 8]())

Activity analysis in terms of mental strategies

A mental strategy is a category of cognitive task procedures which are based on a particular kind of mental model and the related interpretation of information, and of a particular set of tactical rules. A further analysis of the decision task requires another shift in language in order to be able to compare task requirements with the cognitive resources and subjective preferences of the individual actors. For this purpose, the mental strategies that can be used for each of the decision functions are identified by detailed analysis of the actual work performance. The characteristics of the various strategies are identified with respect to subjective performance criteria such as time needed, cognitive strain, amount of information required, and cost of failure. ([Mark Pejtersen & Fidel 1998, 6](); [Mark Pejtersen & Rasmussen 1997, 8]())

User characteristics, individual actor´s resources

The degrees of freedom in work performance of the individual have been delimited by identifying the work- related constraints down to the level of mental strategies which individual actors can use for making decisions. In order to judge whether a given factor is able to meet the requirements and determine the approach to work which might be chosen, the resource profile. This perspective of analysis is focused on the background of the relevant user category and the level of expertise, and the performance criteria of individual actors. ([Mark Pejtersen & Fidel 1998, 7](); [Mark Pejtersen & Rasmussen 1997, 8-9]())

Organisational analysis, allocation of decision roles

The principles and criteria that determine the allocation of roles among the groups and individuals involved should be identified. This phase of the analysis identifies the scope of the information window which should be available for an actor during a particular work situation and the information exchange with cooperators needed for coordination. ([Mark Pejtersen & Fidel 1998, 7](); [Mark Pejtersen & Rasmussen 1997, 9]())

Social organisation, management structure

Management structure influences the subjective performance criteria of the actors and therefore, indirectly the formulation of goals and constraints. Identification of the communication conventions underlying the social organisation is necessary. A work analysis will not proceed as an orderly top-down, starting with the work domain and finishing with the user characteristics, users´ cognitive resources and value criteria.

The broader context of the entire work environment will be activated during the analysis of both task activity and user characteristics. In particular, the analysis of the work domain and the task situation and frequent iterations among the perspectives will be necessary. (Mark Pejtersen & Rasmussen 1997, 9)

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