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Human issues of library and information work

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Abstract

This paper examines philosophical, methodological and practical strategic aspects of library and information activity from the viewpoint of natural human and social factors. In contrast to traditional methodological patterns, real-life information problems and supportive methods of information seeking are stressed. The formulated conceptual framework is related to new competencies of information professionals, needs of information institutions and position of a human being in information processes. New methodological approach is outlined in models including factors with impact on a position of people in information work, human complexity and relationships of people and information. The resulting idea of human unity in information-related behaviour forms the vision of research directed to philosophy of a man in information science.

Introduction

This paper is aimed at examination of generic human aspects of library and information work. The topic has gained much attention recently, especially with respect to concepts of digital libraries, user modelling and new roles of libraries in digital networked collaborative environment. It is also connected with knowledge dynamics and new methodological challenges of information science related to information seeking and use. Traditions of investigations in user studies, information needs and information retrieval can be integrated within human and social (cultural) support of information problems solving.

The framework of our reflections includes questions concerning information professionals, needs of employers and factors that influence professional library and information work. We regard human-centered research as holistic perspective of both individual (cognitive) and social (social constructionist) approaches to library and information processes. Several details regarding relationships of users and information professionals are emphasized in proposed models which depict the position of a man in information processes, human complexity in information environment, and relationships of people and information. From strategic viewpoint values and attitudes of library and information work have been stressed. They are more and more important for quality of information products, information services and information systems, as we can see it from our central European perspective (particularly the Czech and Slovak situation), which requires identification and better support of human part of changes in library and information system.

Background

Technological development has been so fast in recent decades. It has imposed many changes on traditional library approaches, methods, solutions. However, it seems that the answer to the question of human development within these processes would be rather uncertain. The development of a man compared to technologies has been rather slow, as we can observe especially in the situation of Slovak library system practice. Human factors of library and information work can be determined as a personality of human being in creation, mediation and use of information including complex communicative human relationships. As opposed to traditional idea of "neutral" library and information processes, new ideas take into account natural human, subjective (cognitive, affective) and cultural and social conditions of these processes.

Traditional patterns of thought in library and information work have been very closely connected with physical organization of collections, localization of information sources, or technological support. For quite a long time of practice, *human functionality* has not been seen as the focal point for further development of this work. At present, many research projects and results appear which consider deeper knowledge of human being (as a whole) in library and information processes. These processes include not only rationalistic (logical cognitivistic tradition), but also other cognitive, affective, behavioural and social components. It is clear that information seeking gateways (to which libraries are being transformed at present) should become closer to the ways people think and act when faced with information problem solving. These ideas have been proved by research works of Borgman and others (Social aspects..., 1996), Kuhltau (1993), Hjorland (1997), Wilson (1995, 1999) and others. The original cognitive approaches (e.g. Allen, 1991, Ingwersen, 1996, etc.) are complemented by more holistic, social and activity approaches which lead to organizational and social issues of information needs, digital libraries and information seeking. The models of support of information-related behaviour are successively transformed from linearity to complexity of human and social considerations, including levels of an individual, communities or groups.

That is why we can state that the so called "postmodern library" brings new balance between universalism and multiple interpretations combined with different situations and problem types. As technologies grow, it becomes possible to manage various viewpoints emerging from concept formation and interpretation. Ideas of creation, seeking and use of information are methodologically shifted from positivistic (linear) traditions to phenomenological and hermeneutical approaches with the emphasis on social settings and interpretation. In information seeking and use we cannot disembody knowledge from acting, human and social unity, conceptual re-coordination or circumstantial practices.

We suppose that information problem solving is a cyclic, socially- and cognitively- based process in which knowledge develops. Several ways of conceptualization and re-conceptualization arise from constant re-construction of different interactions. This has an impact on *different modalities of information processing* (e.g. face-to-face communication, databases, location-specific interaction in work environment, social knowledge, etc.). Other factors of influence on information communication and use include cultural differences, personal (emotional) attitudes, cognitive evaluations, social behaviour and environment. Different possible affective states of human beings can affect patterns of information use (e.g. sensing, recognizing, understanding, synthesizing, but also interest, uncertainty, anxiety, surprise, engagement or boredom). In culturally different settings we could find different ways of expressing knowledge based on different models of practices (communication, collaboration, learning, working habits).

In our view, new methodological challenges of information science cover *transdisciplinary approach to real-life problems* of information seeking and use. It is possible to make use not only of communication studies, psychology, human factors, human-computer interaction, education or linguistics, but also social and cultural studies of technology, cultural and linguistic anthropology, organizational and group communication, semiotics and other disciplines. Information seeking and use are socially-situated human activities based on situated cognition, situated activity and behaviour and situated learning. This idea has created new perspective not only of information science research, but also of other disciplines concentrated on knowledge and communication, namely those which make use of advanced technologies (e.g. artificial intelligence, Sierhuis, 1996). It is also important to stress the shift from descriptive methods to supportive, dynamic methods which can take into account changes in knowledge at any time, at defined problem situations, and for determined user groups.

Our approach tries to assess knowledge and practice concerned with human aspects of library and information processes. We would like to formulate a *framework* for understanding the role of people in information processes, including creation, seeking and use of information and knowledge. From more practical viewpoint we have chosen questions concerning information professionals, needs of new information institutions (potential employers), factors that influence the position of a man in information processes, new partnerships of users and information professionals, and vision of possible development of library and information work and deeper research into human issues. Basic aspects of library and information work with respect to human issues are concentrated on:

- the position of a human being in information processes,
- elements in the environment of information work, especially social changes in digital age, and technologies and culture with impact on human beings development,
- important relationships of people, technologies and information and knowledge embodied in interaction when seeking information (human-computer, human-human), in development of special infomation service, special

information system, or special information product.

Information professionals

In order to understand new roles of library and information workers in changing digital world we formulate the question: *Which are new functions of information professionals from the human viewpoint of library and information work?*

Information professionals have to deliver information, information products and information services for special problem situations in which users seek for information. If we admit that in comparison with the past library and information institutions are more open in every respect, we also have to try to understand social nature of library and information work which supports *situations of information problem solving*. Information professionals should navigate users to resources, but at the level of special professional agents who can add value through organization and analysis of these resources. Information professionals should also help determine information needs of users. This is a complex diagnostic process based on human-human interaction, questions-answers, interview, negotiation. It means complex human communication, of which about 80 percent is non-verbal. Information science should develop better tools and methods of description and support of these processes in library and information work.

Information professionals manage and organize information resources. Traditional concerns of libraries has been explicit knowledge. Its modelling for purposes of knowledge organization has had long traditions in library and information science. But *situated knowledge, situated cognition and behaviour* with respect to information seeking, creation and use seem to become new challenges for user and knowledge modelling. Obviously, human issues raise the question of implicit knowledge including intuition, know-how, experience, emotions.

Another challenge is represented by the task of professional information problem solving. Traditional modelling approaches of information retrieval and knowledge organization usually neglected cultural, behavioural and contextual factors of information-problem solving. Although we have tools for modelling general steps in problem-solving, knowledge modelling depends on types of specific problems. Moreover, the balance between general and specific in information services, information products and information systems should also be considered. That is why it is required to pay more attention to techniques of problem solving in library and information situations.

Information professionals should be partners of users, who provide them with support, advice and training with respect to information seeeking patterns. They should provide them rather with *supportive activities* than with information as something completed (the only correct answer to the "query"). We can speak of "information empowerment" of users in terms of human support of information problem solving resulting in active, dynamic provision of information to users. Again, at present, the extent of generalization and domain specializations are determined rather individually and intuitively by information workers. This is also related to user groups and tailoring services to them, but also to multi-level, multi-lingual and multi-media characteristics of knowledge organization and information seeking. Other components of knowledge and information situations include problem goals (contexts), forms and presentations of content, and ways of the interaction facilitation.

Generally speaking, information professionals are human beings who try to *transform information to knowledge*.Within the interaction with users they use cognitive, physical, emotional and behavioural components. That is why we need to discover new methods which are hidden behind the surface processes of everyday library work. Information processes can be regarded as human and social processes which should be newly defined in a new situation. "Tailor-made" new information products for special user groups require more knowledge and intellectual insight from new information professionals. This is represented by human nature of information seeking interaction which should include sensitivity to context, personal and historical memory and experience, special individual or community viewpoints. New positions of information professionals are being already transformed into such professions as information systems and information sources managers, knowledge officers (managers), information brokers, web-masters, storyborders/multimedia developers, etc.

Needs of Employers

Another question rises when we think of new education of information professionals. *What are the needs of potential employers with respect to competencies of information workers?* (e.g what will library managers and managers of other (new) information institutions expect from their staff in future?). In search for the answer we

have identified several possible expectations.

One of the most expected human professional qualities is that of *creative problem solving*, which means special information seeking know-how of information professionals and their abilities to support other people when faced with this problem. Creativity forms a crucial part of human activity, especially when connected with information and knowledge. We should pay more attention to the ways human beings create information products, systems and services in order to develop systems (agents) that would support the ability to transform previous solutions to new relationships or to design new concepts. It can be useful to determine individual and social creativity in information work.

Next requirements are concentrated on *professionality* in a broad sense of this word (acceptance of an important role of information agents in social life, professional behaviour, professional services). In this respect it is necessary to re-formulate clearly the role of special information professionals in social development. Their professionality relies on consultancy, supportive and intervening principles of specialized "service" professions (e.g. law, medicine, education). As for personality characteristics of information professionals, we emphasize motivation, initiative, dependability and persistence. Again, it would be useful, if our research could tell more about these features of new information professionals as complex human beings.

In the last decades, we have been faced with requirements for special advanced technological background of information professionals. Today, the complementary needs of *social and communicative competence* and emotional intelligence have appeared. We should know more about these characteristics of information professionals. Better communicative patterns include also special cultural factors of information communication and use. By term "cultural" we refer to wider concept of sociological patterns in organizations, groups, nations, determined by attitudes, values, relationships, social norms, historical memory. Social knowledge means especially what people know about other people, and information science would need to expand this knowledge into its research related to models of information creation, organization, seeking and use. As examples we can mention new research topics of ISIC conferences (Vakkari et al., 1997; Wilson & Allen, 1999) or research in social aspects of digital libraries (Social aspects..., 1996).

New terms like "digital culture" or "virtual environments" imply not only technological advances, but especially their integration into social life. From this viewpoint information professionals and information science can help create approachable and enduring knowledge structures for information infrastructure based on social and collaborative information behaviour. For example, international research agenda for digital libraries in its "Brussels' report" (An International Research Agenda...,1998) stresses not only "knowledge collaborative networks", but also support of humans as individuals and organizations in distributed knowledge-based activities. Apart from questions of access to information, information science research should also reflect new modes of creating and sharing information. Complex situations of information creation and use are human-centered and as they serve all society, they require high quality and reliability of knowledge supported by information professionals.

Another concern is related with finding harmony betweeen *general background and practical specialization* of new information professionals as human beings who are able to interact with other people at various levels of information needs. These levels may depend on cognitive and affective processes and learning styles, knowledge states (initiation, selection, presentation), knowledge types (e.g. know-how, experience, intuition, etc.) multicultural and multilingual issues, work and social activities, cultural values, patterns of collaboration and innovation. Information professionals should be aware of these differences (general social competence) in order to support real-life problems of knowledge creation and use. The ideal case for global information and communciation profession is combination of general (strategic, visionary) perspective with practical specialization including especially abilities of problem structuring, determination of essential issues and wider contexts.

Position of Man in library and information processes

The intersection of factors that influence the position of a man (human being) in library and information processes is depicted as a general model on figure 1. The model reminds us of a semantic triangle from semiotics. But in contrast to original positions of reality (object), signs and concepts, this model shows that basic library and information work is organized by institutions and technologies managed by people. Human dimension is represented by a man who tries to conceptualize, create and use the culture (knowledge and social know-how) by means of his cognitive and behavioural representations. Dialogue of technologies and culture is mediated by man

and his culture as set of values and principles based on social patterns of communication and use of information.

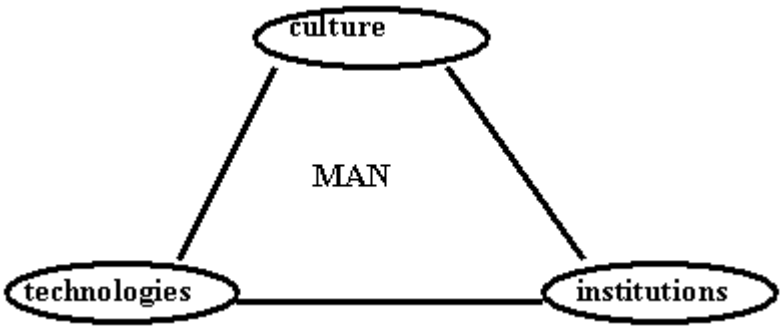

Figure 1: Model of factors with impact on a position of man in information work

This intersection of elements (components) can be visible through digital social transformation which changes workstyles, communicative styles, learning styles, and also information seeking styles. Group- and project work is another result of mutual influences of components. Product development is the result of knowledge management which is based mainly on social network capable of effective use of knowledge. The effectivity of information seeeking interaction is connected with institutional (company) culture and professional culture which has not been deeply explored and designed for library and information professionals yet (especially in Slovak library system). As a result the needs for closer integration of information technologies into library and information processes can be derived and change of rigid organizational (institutional) structures into human groupwork and better management of institutions, people and knowledge required.

For new partnerships of users and professionals it is necessary to develop their "common world" based on human and social activity, often out of traditional institutional frameworks. Information seeking and use connect individual and group (social) experience and have to take into account different communicative and cultural patterns. This has to be addressed especially in multicultural settings.

In an attempt to generalize these starting ideas, we have developed another model. It is aimed at explanation of human issues in information communication and use.

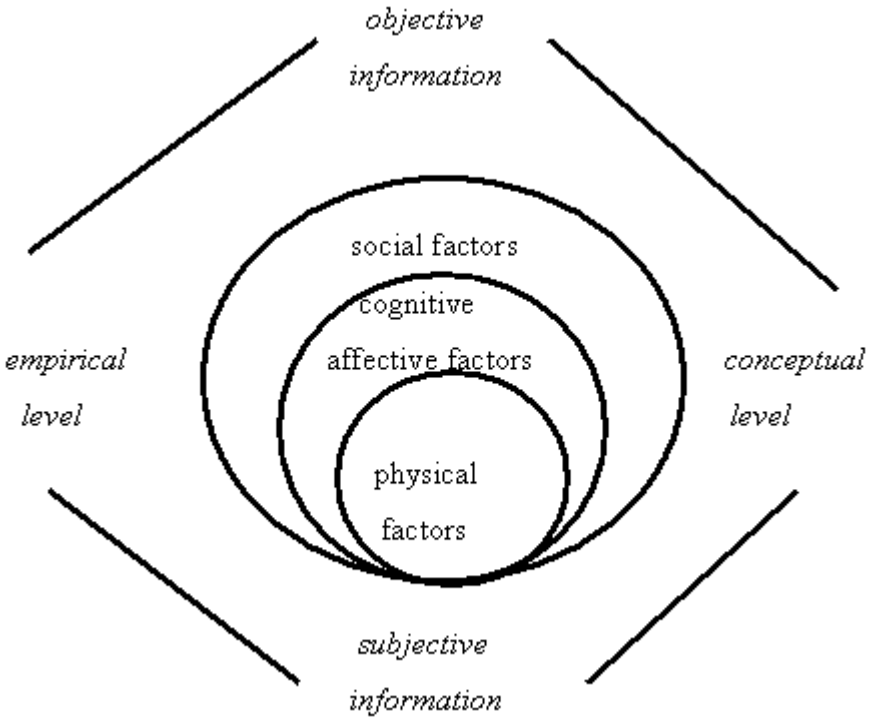

Fig. 2 Model of human complexity in information environment

The model of a cyclic human factors in information environment (fig. 2) shows three basic components of human unity (physical, cognitive and affective, and social factors). The factors are mutually connected in spiral movement of information-related behaviour (creating, distributing, seeking and use). We distinguish objective and subjective sides of information (information-related activities, knowledge and communication processes) which have

substantial impact on human position in information processes. Empirical level relates to human experience, cultural, historical, gender and other situational factors of human information behaviour, while conceptual level is regarded as special modes of conceptualization of these contexts. The model helps visualize human issues of library and information processes at generic level. It should be further elaborated on in research directed towards philosophical foundations of a man in library and information science. Basic advantage of this approach is not only its holistic perspective of human information activities, but also the spiral and self-organizing development of dynamic knowledge creation and use.

These models can be used for further research into *new methodological approaches* to human factors definitions whithin a new paradigm of information science. It is also necessary to investigate possible collaboration with other professions which participate in global communication of knowledge (e.g. publishers, information brokers, media agents, etc.). We propose to look at them as complex human beings who are set into similar settings of knowledge communication and who need information workers for specific reasons.

New Partnerships

The question of changes in the partnership of users and information professionals further fosters positions of human beings in the triangle of technologies, culture and information institutions. This partnership is determined by contact of people and information. As a result, special *information services, systems, products, actions and interventions* are designed. The relationship is modelled in Figure 3.

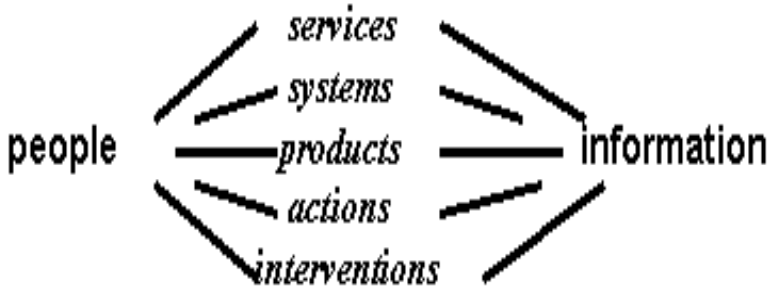

Figure 3: Relationships of people and information in library and information work

The question is how to use knowledge efficiently by means of different kinds of analyses, syntheses and interpretations which are embodied in activities of information professionals. Human issues of library and information work then represent *complex activities of information professionals (services, systems, products, actions, interventions*). This theoretical perspective should be incorporated into developmental strategies of new library and information institutions.

Through categories of services, systems, products, actions and interventions new partnerships of users and information professionals can emphasize human relationships. The relationships should be based on professionality. At present, as a result of technological development, traditional borders of knowledge institutions (e.g. libraries) disappear and the profession itself is becoming more important. That is why techniques of social communication and intercultural issues should be explored, again based on human characteristics of professional information work. It would be good, if library managers (in Slovak library system) could understand and manage the transition from technological development to *changes of culture* and relationships of users and workers (experts in information problem solving). These changes take into account creativity, experience, intensive interaction and direction towards learning institution. Many supportive (technological) methods can be used for these purposes, e.g. customer-relationship management, etc.

If we tried to simplify the borders of this partnership, the following two aspects could be significant: *1. Diagnosis of information needs* of users, and *2. Users' evaluation* of systems, products, services, which is based on human processes of relevance, quality of service, continuity of information systems and social and human audit of library and information work.

Diagnosis of information needs can be regarded as complex process in which information professionals become experts in contacts with users. They try to understand the problem and the situation of information need and in interaction with user assess information need evolution and apply appropriate procedures. The emphasis is laid on communication, context, preferences and limitations of information use. As for evaluation of services, systems and

products, we regard relevance as cognitive and social category. (Steinerova, 1996, 1998a). It means focusing on wider social effects of library and information work, prospective evolution of services and processes, or social audit of new information institutions including libraries (e.g. community identity, social coherence, etc.). Usefulness, efficiency, quality of information and social interaction need better (new) research methods of library and information work evaluation. For example, one of the possible productive solutions is the inclusion of users into design of information systems, services, products. This has been demonstrated in development of digital libraries, with knowledge of cultural patterns of user groups applied to tools or language patterns of retrieval interaction.

Vision

The vision of research into human issues of library and information work should concentrate on special levels of professionality required for special levels of domains, problems, user groups (needs). In search for new methods of human issues investigation we distinguish *methodological stages of concept building, finding contexts and product (service, action, system) development*. Thoughts and feelings which lead to understanding of knowledge and information use result in conceptual structure as part of information-related activities. Main conceptual factors indicate recognition of information need, identification of general topic, further elaboration, searching and presentation of information. Developed conceptual structure should be then set into special contexts represented by social and environmental factors (local and cultural viewpoints, knowledge use patterns, interactive and collaborative patterns). And at the stage of product development the physical representation of cognitive and affective, social and environmental factors of information-related behaviour is developed. Special knowledge organization tools should also accept more social and culture-specific principles, knowledge dynamics (evolution in time) and possible changes managed by users. Based on user interfaces we can concentrate on flexible, user-friendly systems of knowledge organization.

The question of new information seeking patterns could be explored in design of special (web-)agents that support creative solutions. Human issues should help find new relationships and partnerships for library and information work. Regarding information seeking the vision is embodied in research of retrieval patterns of different individuals, groups, communities. Issues of prototypical user needs, special group relationships, typical user requirements, presentation requirements, relevance assessment, personality models, information seeking strategies, effects, favourite information formats, media, retrieval tools, communicative preferences, etc. are related to interesting cultural patterns of user communities. At our Department, several interesting students' works have been completed within this research framework, e.g. gender differences in information seeking patters, personality types and information seeking patterns, etc.

Human and social issues of library and information processes should be investigated at the levels of theory, research and methodology, but also at more practical levels of education and training of new information professionals, and practical day-to-day management of institutions including new partnerships and company culture. The level of national coordination should provide for social and legal conditions of library work. In our view, the human dimension forms a strategic part of *the development of new information institutions*.

We propose that a new *philosophical framework of a man* in library and information processes could be developed, including questions of creativity, responsibility, technologies and culture in the information age. Special characteristics of human beings in natural and cultural settings stress the differences of humans from the rest of biosphere, namely emotional background, anxiety, and groupwork. If we better knew human issues of library work, we could design prototypes of user needs. We could try to support quality of life and cultural development by means of library and information services based on human processes of learning, cognition, emotions and information-related behaviour. Other research issues that should be addressed include different types of perceptions for information seeeking, helpful assistive technologies supporting information seeking and use, ways of rise of learning and information behaviour in humans, emotional expression in information problem solving, and conversational contexts in topic modelling.

Conclusion

In conclusion we argue repeatedly that library and information work is not neutral, but rather human-centered. We propose to get more information about *values and attitudes* of human beings who interact in library and information processes. They are based on social conditions, as well as on individual cognitive and behavioural features.

Information science in theory and practice simply cannot exclude emotions and empowerment of people by means of technologies and information. Research topics related to human issues can enrich library practice and help manage changes of digital information world.

At a philosophical level information science should reflect transition from universal approach (unified representation, organization, presentation) to *multiple knowledge levels, contexts, interpretations*. It has to accept principles of different domains, topics, commmunities. Multidimensional, multifunctional knowledge and interaction confirm natural human complexity of information-related activites.The modelled relationship between reality and its interpretation is more flexible and supports variety of interpretations and changes in cognitive states and social contexts of information seeking.

Our models have shown possible ways of interpretation of human issues in library and information processes. The outlined framework described links between theory and practice. Information systems, services and products are results of complex societal problem of knowledge use in information society. Research, theory and practice should collaborate closely in order to better understand human and social issues of library and information work. The proposed models and framework can be used for further research with the use of empirical methods.

If library and information professionals were more perceptive to others' knowledge, resulting services and products could support better understanding among people, groups, nations. And words could become closer to concepts as results of human and social principles of information use.

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