The Organization of Knowledge in Light of Egan and Shera's Social Epistemology and Elias' Symbol Theory

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Abstract

Knowledge organization or information organization, in a narrower sense, is an area of Library and Information Science (LIS) concerned with activities such as document description, indexing, and classification performed in bibliographic and cybergraphic repositories for their rapid and economic retrieval for use by society. Knowledge organization is an essential second level knowledge product; while a first level knowledge production studies the scientific phenomenon via general social epistemology, especially in the guise commanded by Steve William Fuller's program. In this second level, knowledge organization studies the problem of mechanisms and existing bibliographic systems and the extent to which they are congruent with the realities of the communication process and the findings of epistemological research via special social epistemology, an academic discipline created by Jesse Shera and Margaret Egan. Additionally, the definition of "symbol" as the essential object of information science is examined, following the theoretical foundation of information developed by Norbert Elias' "The Symbol Theory".

Keywords: Knowledge Organization; Knowledge Production; Social Epistemology; Symbol Theory; Information Retrieval; Jesse Shera; Margaret Egan; Norbert Elias

1 Introduction

Around 3100 BCE ancient Sumerians of Mesopotamia conceived and developed systems of representation of language through graphic means. Independent writing systems also arose in Egypt around 3100 BCE and in China around 1200 BCE. Later on, ancient civilizations recorded lists of books onto tablets and libraries started keeping records of their holdings. Until very

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recently, the mechanisms for bibliographic control were created and developed by trial and error until an adequate solution to a practical problem was proposed (Fagan 1966, p. 762).

Early in the history of books and libraries, beginning circa 200 BCE, according to the very fragmentary surviving records, the poet Callimachus, head of the Royal Library of Alexandria, controlled the library collection of papyrus rolls using lists arranged with alphabetically, the πίνακες, that are considered the beginning of bibliography. Few records remain about the organization of another ancient library, at Pergamum. Papyrus rolls were stored in Greek and Roman libraries in *armaria*, a system known as "pigeon holes". It is uncertain whether these *armaria* were arranged in some subject order. After the fall of the Roman empire, early medieval European monastic libraries continued to store papyrus rolls, copying the information onto more permanent parchment codices when the original support disintegrated (Battles 2003).

From the very beginning, on the basis of a practical approach for the creation of tools for the preservation and dissemination of the recorded knowledge, human beings regularly applied an analogy between the operation of their individual thinking and that of the collective memory, composed of the universe of graphically represented human knowledge.

In mid-20th century, with the advent of scientific research in the field of Library Science, Jesse Hauk Shera and Margaret Elizabeth Egan developed a course on "Social Epistemology" at the Graduate Library School of the University of Chicago to study the nature and effectiveness of existing information storage and retrieval systems in order to improve them to become "in congruence with the realities of the communication process and the findings of epistemological inquiry" (Shera, 1972, p. 114). At that time, Social Epistemology as a theory for bibliography **(1)** required a semantic understanding of the "graphic record" as the original "matter" of information; fortunately, a comprehensive review of the object of Information Science has been more recently produced by Norbert Elias in his "The Theory of Symbol" (1991). In our present study, the approaches of Social Epistemology and The Theory of Symbol are examined for the comprehension of information as the original and specific object of a scientific discipline of Information Science.

2 Theoretical Foundations of Library Science: The Beginnings of Research

Library science emerged as an academic discipline specifically assigned with the theoretical investigation of the phenomena related with the universe of recordings of human knowledge. This discipline was created for the study of the accumulation, organization, retrieval and transmission of information contained in "graphic records" as an external memory of society for the preservation of recorded human knowledge. The institution of this social scientific discipline occurred in the context of the advent of most social sciences around mid-19th century. The first American school of Library Science was devised as a "Course of Library Economy" **(2)**, founded by Melvil Dewey at Columbia University in 1887 soon after the institution of the American Library Association (1876). (School 1937).

One of the pioneers of research in this area, Pierce Butler (1886-1953), was a faculty member of the first school to establish, in 1926, an advanced program as Graduate School of Library Science (GLS) at the University of Chicago, Illinois, USA, offering exclusively a doctoral degree. Butler regretted the lack of commitment of American librarians in researching the "theoretical aspects of their profession": "I would suggest, in this opportunity, that the librarian, unlike the modern man of his time", seemed "to possess a peculiar immunity to this type of curiosity", remaining "isolated in the simplicity of its pragmatism" (Butler, 1933, p. xii). **(3)**

According to Butler **(4)**, the pragmatic (i.e., practicalist) character until then widespread among professionals of Library Science even jeopardized "a rationalization of each technical process immediately, taken separately"; even so the faculty of GLS taught the traditional disciplines and deeply devoted themselves to research. Thus, they were able to offer a model of education and research in Library Science. During the same decade of the 1930s, other centres of excellence established themselves, both in the American continent and in Europe (Wynar 1971).

2.1 Social Epistemology, by Margaret Elizabeth Egan and Jesse Hauk Shera

Among the first scholars who proposed to investigate the theoretical foundations of a science of the library in the USA, Jesse Hauk Shera (1903-1982), educator and philosopher, stands out. Shera's interest in the sociological aspects of Library Science was already expressed in his master's thesis at Yale University and subsequently in his doctoral work at GLS from 1938 to

1940. From 1947 to 1952, Shera held a teaching appointment at GLS. The intellectual environment at the University of Chicago offered him a philosophical and theoretical interdisciplinary approach for the study of Library Science service, as well as for the cooperation of leaders in research in this area, among others, Douglas Waples and Pierce Butler.

After the Second World War, Library Science suffered a split in its theoretical foundations with the emergence of a new science under the name of "Information Science", with the aim to "study the production processes of information in any system in which it occurs". The first academic course in information science took form in the mid-1950s as the "School of Library Science", of which Shera was appointed dean in 1952. This program was housed at the "Western Reserve University", later "Case Western Reserve University", Cleveland, Ohio, USA. From 1960 Shera was appointed as director of the Centre for Documentation and Communication Research, Cleveland, the first institution to develop an academic discipline of Information Science.

From the end of the 19th century, Library Science endured a new disruption, when an "invasion" in the area of professional practice took place in 1893. Paul Marie Gislain Otlet (Brussels, 1868-1944), author, businessman, and lawyer, and Henri La Fontaine (Brussels, 1854-1943), lawyer and Belgian politician, introduced the "documentation movement" to cope with the analysis of the avalanche of non-retrievable literature accumulating in libraries. They proposed that this analysis should be carried out by scientists under the auspices of a new professional corporation built on "Documentation". On the other side of the Atlantic, however, the vast work of Shera supported consistently the belief that both Documentation and Information Science are integral parts of the whole of Library Science, to the extent that Library Science is a generic term, while Documentation applies to a specialized area within Library Science, and Information Science contributes to the theoretical basis and intellectual capacity of the operations of the librarian, converted into an information scientist.

Based on the assumption that the main purpose of Library Science is "to bring to the point of maximum efficiency the social utility of man's graphic records" (Shera 1972, p. 113) through the mechanisms of knowledge organization created for information retrieval, Shera envisaged a "new discipline (for which, for want of a better name, Margaret E. Egan coined the phrase *Social Epistemology*)" to investigate "the complex problem of the nature of the intellectual process in

society – a study of the ways in which society as a whole achieves a perceptive relation to its total environment" (Shera 1972, p. 112). Library Science essentially studies the recorded human knowledge. For Shera, Library Science's foundations are eminently epistemological. At the same time, he recognized that the branches of the individualist epistemology of his time did not supply answers for the problems that arise from the interaction between knowledge and social activity **(5)**.

In most occasions when Shera published works about this new discipline, he named it "Social Epistemology". The proposal of the discipline of Social Epistemology was originally disclosed by Shera in a conference in Cleveland on March, 12, 1960 (Shera 1961). The theme of this conference would pervade a number of Shera's later writings. A strengthened Social Epistemological gained greater visibility with the five "Sarada Ranganathan Lectures", after Shera's address in Bangalore, India, in 1967, and published as a book in 1970 (Shera 1970). This same subject-matter became a large proposal of research on library education which resulted in Shera's main work, published in 1972 (Shera 1972) **(6)**.

In the series of lectures delivered in India in 1967, Shera noted that both psychologists and philosophers studied knowledge exclusively as a phenomenon occurring within the individual. At that occasion, he suggested that the study of a Social Epistemology should be undertaken as interdisciplinary research by sociologists, anthropologists, economists, psychologists, physiologists, mathematicians and information scientists **(7)**; but also by linguists, "since we are dealing with a communication system". In Shera's work, this proposed inclusion of linguistic research was a major interdisciplinary interaction, which would introduce the foundations of Social Epistemology in the process of interpersonal communication through language.

In his book on the foundations of education for Library Science, Shera (1972) assigned the whole fourth chapter to the discussion of Social Epistemology as "An Epistemological Foundation for Library Science" (p. 109-162). This is the document in which Shera (1972, p. 114) argued that the problems that librarians should prioritize are:

> The problem of cognition – how man knows.
>
> The problem of social cognition – the ways in which society knows and the nature of the sociopsychological system by means of which personal knowledge becomes social knowledge.

> The problem of the history and philosophy of knowledge as they have evolved through time and in variant cultures.
>
> The problem of existing bibliographic mechanism and systems and the extent to which they are in congruence with the realities of the communication process and the findings of epistemological inquiry.

After presenting these four issues, the fourth one unequivocally laying out a plan for Social Epistemology, Shera explains how the tools and methods of subject analysis of bibliographic units are no longer in congruence with the advancement of epistemological studies and the communication of knowledge. With the advent of the Internet and the prevalence of search engines to retrieve the subject matter of any branch of study, results are retrieved in an avalanche of mixed and improper hits, mainly because digital documents were not properly analysed and organized beforehand. This is certainly a problem for Social Epistemology to solve for the benefit of future digital documentation organization and control. *Infra*, a section on "physical accessibility" and "subject accessibility" to documents, both analogical and digital, will be presented.

2.2 The Symbol Theory, by Norbert Elias

A theoretical synthesis based on the investigations on the four problems raised by Shera was not found in his works published subsequently to his 1972 book (Shera 1972). There also is no record of authors who attempted a reply to the questions raised by Shera, even after perusing extended reviews. Shera himself seemed unconvinced of the value of his proposal, for in several of his papers tackling this topic, he hesitated about the proper term to identify his academic discipline. The final work by Shera (1983) was published after his demise on March 8, 1982. In this last paper, that does not even mention the expression "Social Epistemology", Shera (1983, p. 386) writes:

> I submit that librarians must look to "symbolic interactionism" for the proper foundation of a theory of librarianship. This term, first named by Herbert Blumer in 1937, is rooted in the social psychologies of William James, Charles S. Peirce, Charles H. Cooley, John Dewey, and George Herbert Mead.
>
> The term *symbolic interaction* refers to the process by which people relate to their own minds and the minds of others; the process by which individuals take account of their own or others' needs, desires, means and ends, knowledge, and like motivations. Among sociologists this phenomenon is frequently known as social interaction.

The choice of words and phrases to represent the core of a Shera's lifelong proposal for the creation of an academic discipline which he labeled variously is a clear sign of his high concern for library education. It is also manifest the great influence he had from those eminent scientists named in the excerpt above at the University of Chicago, as a PhD student and later as a professor. By mentioning the title "symbolic interaction" in his last work, Shera had a rich insight on the meaning of "symbol", perhaps as the main idea composing the complex concept of "information" as the object of information science.

As Shera did not have time to develop the concept of "symbol", this mission came to be realised by the German sociologist, Norbert Elias (1897-1990), who by the end of his life had the vigor to dictate a major work, *The Symbol Theory*, published in 1989 and posthumously in 1991 with na introduction of his editor Richard Kilminster. With the appearance of Elias' symbol theory (1991), it seems quite appropriate to study Shera's Social Epistemology in light of this theory as a synthesis. Both Shera and Elias express dissatisfaction with the solutions presented by traditional thinking to the problem of knowledge, especially by the viewpoints of individualistic epistemology. In the introduction to Elias' theory, the editor Richard Kilminster states: "echoes of the German sociology of knowledge reverberate in this piece, as in much of Elias' work. But he took the tradition much further, deepening and extending that part of the programme which called for a sociological epistemology and ontology to replace traditional philosophy" (Elias, 1991, p. x).

Norbert Elias' symbol theory is the result of a deep analysis of the long-term process of anthropogenesis, the so-called period of "humanization". In the process of evolution, human beings stood out from other species by the unique ability of their group to communicate intersubjectively through the transmission and reception of "sound patterns", to which they progressively added meanings thus making the structuring symbols of language. Language is not an innate ability of human beings. By nature, they are only supplied with biological power for learning the language of their ancestors. No matter the point in time in which the process began. "Languages enable humans to transmit knowledge from one generation to another and thus make it possible for human knowledge to grow" (Elias 1991, p. 32).

For Elias, human beings' capability to communicate with their peers through symbols is the unifying basis of their processes of language, thought, memory, and knowledge. The conquest

of this unique capacity represents a *symbolic emancipation* with relation to the previous condition of a genetically conditioned communication for humanity. In this context, while *evolution* represents the biological process obtained through genetic transmission, *development* is the social process that allows symbolic transmission among members of a human group and between generations.

In its turn, Library Science is the study of the universe of human knowledge gradually recorded in a diverse range of physical media, regardless of the addition of new ways of graphic communication. As Shera (1972, p. 193) states, "the *book*, or the *graphic record*, by which is meant any physical entity on which is recorded a transcript of human experience, is, and must remain, the central concept of an acceptable theory of librarianship".

Elias' theory, on the other hand – as already highlighted – is based on close links between language, thought, memory, and knowledge. According to Elias, "through the medium of languages human beings can communicate and transmit knowledge from one generation to another" (Elias, 1991, p. 36). As a result, "inevitably children acquire with their language aspects of the fund of knowledge of the society in which they grow up which constantly mingle with the knowledge they can acquire through their own experience" (Elias 1991, p. 37). Both components, namely, knowledge received through language from the reservoir of knowledge, and first hand acquired knowledge, through individual experience, becomes closely integrated into one symbolic universe of knowledge.

According to Elias, millions of years were required to reach actual stage of social development, for the symbolic reserve of socially transmitted knowledge grows slowly. In this way, each individual in society relies on the social fund of knowledge congruous with the reality of their time (Elias 1991, p. 90):

> The pool of language in fact contains the sediment of experiences made in the course of many generations by many different individuals and deposited there in a symbolic form. It is not only colours all experiences made by single individuals themselves, it also enables them to draw on experiences and reflections of others. In short the knowledge on which people operate is subjected to an explosive expansion if through the acquisition of a language connected with the knowledge pool of a society.

The empirical phenomenon on which Elias lays the foundations of his synthesis are sound patterns socially imbued by symbols, which constitute language, in other words, oral records as a first level knowledge representation. Although Elias does not identify, in a systematic form, the source from which he drew out his analytic understanding, it seems he collected the original idea of his whole thesis from Greek classics, as shown as follows (Aristotle 1949, v. 1, p. 115):

> Spoken words are the symbols of mental experience and written words are the symbols of spoken words. Just as all men have not the same writing, so all men have not the same speech sounds, but the mental experiences, which these directly symbolize, are the same for all, as also are those things of which our experiences are the images.

2.2.1 The "Sound Patterns" and Writing: Two Levels of Representation

As Aristotle in the treatise *On Interpretation, in The Symbol Theory* Elias analyzes the primary level, or the first level of linguistic representation, i.e., the level represented by speech. However, Elias did not rule out the secondary level, i.e., the second level of representation by writing. The visual symbols, written or printed, are added to the oral-auditory symbols generated in primary human communication in a later stage. Throughout the work on his symbol theory, Elias lays down several approaches to an analysis of the level of writing representation, i.e., the empirical phenomenon of the universe of graphic records. Elias (1991, p. 114) states:

> The development of human knowledge as we know it would be impossible without the unique human capacity of transmitting knowledge in the form of language components from one generation to another. Whether it is an oral transmission or a book transmission, it is a fact that knowledge can be communicated in the form of a language from person to person, which makes the massive transmission of knowledge from one generation to another possible.

Hereafter Elias (1991, p. 117) highlights the role of writing and reading:

> Like the development of writing and reading, of the transmission of knowledge by means of visual symbols in addition to its transmission by means of aural symbols, the domestication of plants and animals was a step on the road which led from pre-scientific to scientific knowledge. Without these and other antecedent advances of knowledge, the breakthrough to the scientific way of extending the human fund of reality-congruent knowledge would hardly have been possible.

Finally, Elias concludes: "Sooner or later knowledge has to assume its sensory form as a spoken or written communication of a person with other persons" (Elias 1991, p. 131).

2.2.2 Storage and Retrieval as Functions of Memory

To the extent that in his symbol theory Elias analyzes the empirical phenomena occurring in the complex network of interconnections that creates knowledge, language, memory, and thinking. His findings also are relevant for a discipline of information theory concerning the organization of human recorded knowledge, specifically to the storage and retrieval of information. Recurrently Elias (1991, p.2) stresses the role of memory in this complex structure:

> They [human beings] are *able to store knowledge in their memory(ies?) and to transmit it from one generation to* another. A very definite form of social standardization makes it possible that within the same society the same sound patterns are recognized by all members more or less in the same sense, that is as symbols standing for the same item of knowledge.

Elias insists that the complex mechanism through which human beings were enabled to build symbolic communication was through a longer process than might be imagined (Elias 1991, p. 26-27).

> The immense human capacity for storing in memory and for recalling from there, if required, personal experiences, which is one of the conditions for learning to use a language, in all likelihood required for its evolution, a much longer and much more complicated line of descent than that represented by what is by now almost a commonsense picture of the descent of humans from beings which resembled the living species of apes.

The role of language, thought and knowledge, as well as of their intimate interaction, should be noted for the analysis of storage and retrieval of information. Elias summarises their function as follows: "...all three activities or products of people refer to perspectives of symbols: knowledge mainly to the function of symbols as a means of orientation, language mainly to their function as means of communication, thought mainly to their function as means of exploration, usually at a high level of synthesis and without any action at a lower level" (Elias 1991, p. 71).

Over the course of his treatise on empirical knowledge, Elias emphasized the role played by human memory in storing and retrieving both knowledge obtained through individual experience as well as knowledge acquired through exchanges between people. In fact, Elias believes this broad biological capacity with which human beings have the potential to alter their own way of life is highly unique. "Perhaps its most basic aspect is the almost unlimited capacity

of human groups for absorbing, storing and digesting novel experiences in the form of symbols" (Elias, 1991, p. 35).

Thus, symbols embodied in language constitute the stock of ever-expanding human knowledge, which can be deposited through education in the memory of each individual. "As a rule children learn early in life to remember which topics of communication specific sound-patterns in their society symbolically represent" (Elias 1991, p.53). These symbols can be stored in the memory and retrieved in accordance with the requirements defined by the circumstances.

Anyone who has taken a test, such as, a university entrance examination, and was not able to recall the appropriate answer to a specific question will have at least experienced how deep the relationship between knowledge, memory, thought, and language is. As Elias (1991, p.114) explains:

> The concept of knowledge accentuates the fact that sound-symbols can be stored in memory tracts of a person and in this case their vocal aspects may become temporarily silenced and inactive. But they are re-activated if the symbolized data stored in a person's memory are recollected from there and are once more prepared for communication as audible or visible symbols.

2.2.3 The "Social Fund of Knowledge" as Collective Memory

One of the characteristics of the "social fund of knowledge", as studied by Elias, is its rapid growth known as the "explosion of information" phenomenon, or, more precisely, the phenomenon of the growth of knowledge at an exponential rate. It is not just a quantitative growth of the universe of knowledge, but the possibility of the expansion of the fund of human knowledge in congruence with reality. This knowledge growth takes place as a result of another of knowledge's characteristics, based on the ability of humans to communicate from one generation to another.

Recently, the spread of new knowledge has accelerated at a much greater rate than in former times. Elias (1991, p. 116, our emphasis) explains that this occurs because of the fact that:

> ... it is obvious that everyone who uses the available fund of human knowledge or who contributes to its further extension, *stands on the shoulders of largely anonymous predecessors*, who individually or as groups made a lasting contribution to the growth of human knowledge. **(8)**

Summing up, this is the ‘economy’ of the fund of available human knowledge: A common fund to which all may eventually contribute and from which each can take freely.

3 The Mechanisms and Systems for Information Retrieval

Storage and retrieval are functions of both human and computer memories. Since ancient times, human beings have manufactured bibliographic control equipment for organizing their own documents. These mechanisms have been designed to identify documents, organize them, set them down in special storehouses so that they can be called back quickly and efficiently whenever needed. The development of these control mechanisms always occurred slowly over the course of lengthy periods. Let us examine the circumstances of the identification of these mechanisms under the phrase “bibliographic control” by Margaret Elizabeth Egan and Jesse Hauk Shera (1949).

Prolegomena to Bibliographic Control is a very short article published in the winter of 1949 by Egan and Shera. The authors proposed the phrase “Bibliographic Control” to describe “those mechanisms used to guide the intellectual energy in extracting, from the totality of information recorded, those portions relevant to a given task, with greater speed and economy” (Egan and Shera 1949). In the summer of 1950, under the direction of Shera and Egan, the Graduate Library School of the University of Chicago held its 15th Annual Conference on the theme of “Bibliographic Organization”, another phrase used by the directors of the conference, Egan and Shera, to replace the original term “Bibliographic Control” in the title of the conference proceedings (Shera and Egan 1952) **(9)**. Since then, these two phrases have been used interchangeably in the library literature until the were replaced by “Organization of Information”.

3.1 “Physical Accessibility” and “Content Accessibility”

For the analysis of bibliographic control Shera took advantage of the analogy of control on conventional mechanisms. After the Second World War, Norbert Wiener created the discipline of “Cybernetics” for the “control and communication in the animal and the machine” (Wiener 1948). It is unlikely that cybernetics was already known to Shera. The control mechanisms of literature are intended to provide access to those members of the universe of documents that are required in response to a need for information. Consequently, the operational goals, namely to provide *content*

accessibility and *physical accessibility*, were defined according to Wilson (1968) in terms of *exploitative control* and *descriptive control* in a bibliographic control system.

To exercise the function of providing physical access to a given document, a bibliographic control system needs only a "formal and physical" representation of that resource (the document to be retrieved, i.e., its document-surrogate or bibliographic record) containing certain standardized statements for the identification or recognition (such as the name of the author, the title of the work, the place and date of publication, the name of the publisher and other physical features) to be searched by those who are interested in the source document so it can be retrieved from a database. Such mechanisms are mainly *catalogs*, through which physical access to the searched item is subject to full control.

The same result is not obtained by the way of a *content accessibility* control system for the *exploitative control, namely mastery over its subject content*, which will not exercise complete control as in the *descriptive control*. The reason why *exploitative control* offers in principle only partial control is because the indefinite universe and continuously changing subjects that every document deal with are practically unlimited, and this immense quantity of topics can be represented by "natural" terms of a documentary language or indexing. For this reason, any topic proposed for retrieval will not necessarily produce a complete outcome for more documents than those that are relevant and, at the same time, relevant documents might not be retrieved. This impracticability of full control of *exploitative control* systems is due to the nature of *relevance* because a retrieved document may not be relevant as an answer to a given question, but it can be in an infinitesimal range between being and not being relevant.

4 Concluding Comments

Jesse Hauk Shera's academic career reveals his resolute disposition to improve education for Librarianship and to lay the foundations of research in Information Science. Shera exercised his academic work based on the precepts of the interdisciplinary education he lived at the GLS of the University of Chicago as a student and as a teacher. He actively sought the foundations of

Librarianship as a practical social service to society and has worked intensely throughout his career for the construction of a truly science of information.

Together with his colleague Margaret Elizabeth Egan, Shera developed the systematic study of bibliographic organization, believing that the storage and retrieval of information was the core of the librarian's activity. At the same time, the main aspect of research on information control viewed as the "extent to which [storage and retrieval of information] are in congruence with the realities of the communication process and the findings of epistemological inquiry" was set up as the discipline of "Social Epistemology".

According to its creators, Social Epistemology should exercise the important role of ensuring that the emerging Information Science should provide the intellectual and theoretical foundations of librarianship. At the end of his life, however, Shera was very critical of the fragmentation of Information Science and of the "problem of disciplinary encroachment" between the practical function of Librarianship and the theoretical role of Information Science. In his last article Shera stated: "In summary, we who are librarians must constantly remind ourselves that information science is an area of inquiry, or research. It is not, as is librarianship, a service or a practice" (Shera 1983, p. 383).

Shera expanded the field of Librarianship by defining "graphic record", thus going beyond the concept of "book". Shera declares the graphic record to be "any physical entity upon which is recorded the transcript of human experience, [that] must remain the central concept of an acceptable theory of librarianship" (Shera 1972, p. 193). Therefore, the concept of graphic record could be seen as a specification of the concept of symbol as defined by Elias (1991). Moreover, Elias' work can be considered a treatise of Social Epistemology **(10)**.

The analysis of bibliographic control was born from the original idea of the difference between the librarian's pragmatism and the theory of social epistemology. For Egan and Shera, librarians "devise and use tools of bibliographic control to organize graphic records", while "the sociologist, as an epistemologist and a social scientist, sees bibliographic control as part of a more general problem of communication, since in its entirety it involves communication with a group of scientists, communication between various groups of scientists, and communication of scientists with lay public" (Egan e Shera 1949).

In turn, Norbert Elias' symbol theory explains the problem of the nature of information as the object of Information Science. Unquestionably, the linguistic symbol is the unique matter of information according to an original univocal concept of information. In face of this, all other information currents, theories, and sciences study information exceptionally in an analogous sense **(11)**.

Finally, Social Epistemology was created as a tool to give Information Science a scientific nature. According to Fuller (2007), "the first discipline called "social epistemology" was information science, as envisaged by the University of Chicago librarian, Jesse Shera, in the 1960s". For this reason, it is proposed that an academic discipline of Social Epistemology be created at two levels: General Social Epistemology (GSE), in a higher level (in agreement with *Synthese* initiative, where Fuller excels with his program), and Special Social Epistemology (SSE), as a specific topic of the general subject (according to Shera and Egan's tradition). Thus, the two currents of Social Epistemology can be integrated, in the hope that General Social Epistemology will strengthen the objectives of Special Social Epistemology as a core program of Information Science.

Supra, we stated that when the systematic study of bibliographic organization was developed by Egan and Shera, they believed that storage and retrieval of information were the core of the librarian's activity. This is also the main research problem for Social Epistemology. Without a doubt, there are many questions in this matter for which information scientists would like to find a solution. The impracticability of complete retrieval of exploitative control, for instance, is the crucial problem of content control of information systems. Classification systems and indexing languages have so far failed to provide reasonable complete answers to exploitative control. Anyone using search engines such as Google has experienced the problem of retrieving an immense quantity of irrelevant and inadequate "occurrences" for any search **(12)**.

Elias' Symbol Theory could provide a solid basis for the analysis of "existing bibliographic mechanisms and systems, and the extent to which they are in congruence with the realities of the communication process and the findings of epistemological inquiry" (Shera 1972, p. 114). In fact, the central problem of these mechanisms and systems is the nature of their knowledge organization systems (*langage documentaire* in the French tradition). Bibliographic classification, for example,

is, albeit artificial, a *lingua franca*, able to make knowledge accessible simultaneously to multiple groups working with different languages to the extent that it incorporates all structural aspects of a conventional language.

The techniques of indexing and abstracting, for example, can find support in Elias' theory of symbol in so far as it provides the empirical guideline for the analysis of the creation of concepts (Elias, 1991, p. 84):

> Traditionally, theories of knowledge area fashioned without regard either for the physical aspects of knowledge in the form of sound-patterns of a language and of cerebral memory images, or of social standardization of sound-patterns which enables them to function as symbols of specific objects of communication, or in other words as concepts.

Elias points to the operation of the human mind as a relevant way for the understanding of the development of various types of terse literature (indexing, abstracts, book reviews, keywords, subject headings etc.), employed by mechanisms of information retrieval (Elias 1991, p. 69):

> A brief example may help to illustrate the fact that what we call mind is a structure of cerebral functions at more than one level, often represented as thought. It is not easy to catch oneself thinking. But if one does, one discovers soon enough below the level of step-by-step thinking in terms of a public language, forms of abbreviated thinking. By way of experiment some intermediate stations are skipped in the onrush of thought and people have difficulties in translating the rush of telescoped reasoning into the step-by-step language required for communication. The telescoped manner of putting linguistic symbols through their paces is often linked to thinking in terms of images.

Elias employs the analogy of thought condensed nature (*telescoped*, p. 69, 71, 76-77) and concludes by leaving an avenue open for further investigation (Elias 1991, p. 76-77):

> I have opened the problem [of the relationship between talking and thinking], referring to the telescoping of spoken and written language, by the use of symbols in those operations we call thinking, but much work remains to be done before the relationship between the handling of symbols in full dress which we call speaking and the handling of symbols in thought operations can be regarded as fully clarified.

Elias employs the telescope metaphor to explain the process of unfolding the speech from seminal elements of thought. Each section of the telescoped thought is "slided or passed one within another like the cylindrical sections of a collapsible hand telescope" **(13)** to lengthen or shorten the equipment (*telescope*, n.) length. In English the verb "to telescope", has already appropriated the

metaphor and conveys these meanings: *shorten, simplify, condense, compact, compress, "reduce, abbreviate, abridge, summarize, précis, abstract, shrink, consolidate; truncate, curtail*" **(14)**. In another passage of his work, Elias also introduces the shorthand metaphor (p. 78) as synonym of *telescope*, both terms highly enriching the analysis of the processes of information condensation **(15)**.

Opening paths for explicit cooperation in the analysis of issues arising in the context of knowledge organization for information retrieval, it is understandable that Elias' high-level synthesis on the nature of knowledge can "illuminate" Shera's proposal of sociological investigation. "Social Epistemology" is an educational discipline intended to create in Library Science practice the appropriate mechanisms to promote efficiency concerning everyone's usage of the universe of recorded knowledge. There seems to be a convergence between Elias' and Shera's programs, even though with different purposes.

At some point in his work, Elias even suggested the mapping, with the aid of books, of social standards of the evolving knowledge (into new paradigms) for certain areas. This suggestion could favour a type of testable synthesis. It also sounds like an invitation to a bibliometric exercise, albeit not directed to the library praxis. However, it remains worthwhile for improving the understanding of the social nature of knowledge, thereafter organizing it in a superior way concerning its public availability to society (Elias, 1991, p. 122):

> As humanity's knowledge fund of knowledge grows, by and large one can say that the individual's chances to innovate increase. The public reception of a discovery as such always involves other people. The historian's approach to the growth of human knowledge tends to accentuate the individual production of new knowledge and to underplay social reception. Yet without the latter an individual innovation lacks an essential aspect of a discovery.

In summary, after studying *The Symbol Theory* by Norbert Elias in face of the concepts advocated by Shera about language, symbol, thought, and knowledge, one is bound to believe that Shera must have had access to Elias' sociological works, or the other way around. In addition, when Shera thought of naming his discipline as "symbolic interactionism", a similarity between those conceptions emerges. This phenomenon is evidenced in that knowledge is a tangible reality spreading in any social group. Formal and informal interpersonal communications among researchers in university departments always happened. As an example, Shera noted at some point

that William Goffman (1965, 1966), together with Vaun A. Nevill (1964, 1967), "has been developing an analogy between the development of scientific ideas and the spread of epidemics" (Shera, 1972, p. 112-113).

Finally, inside the community of the GLS at the University of Chicago, the idea of favouring the research of social against individual knowledge spread throughout the academic environment. Shera recalls capturing the conception of a social theory of knowledge from the first Dean of the GLS, Louis Round Wilson. Thinking on this concept, Egan formally "Christened" it as "Social Epistemology", and Shera tried to develop it throughout his whole academic career. Lastly, from Douglas Waples, Professor of Researches in Reading at the GLS, author of the first handbook on "investigating library problems" (Waples, 1939), Shera also learnt about reading, the essential method for the growth of knowledge.

Notes

(1) Birger Hjørland (2024) has aptly pointed out that social epistemology was first proposed by Shera in the context of classification (1951) and later in the theory of bibliography, in this paper we are focusing more on the latter as a prerequisite for the organization. As explained on section 3, there was a terminological progression in Egan and Shera from "bibliographic control" to "bibliographic organization" (that also led to "organization of information") that might blur the division between the two contexts.

(2) Apparently the founders of the School of Library Economy took advantage of a false etymology of the old name for Library Science, *Bibliotheconomia* (from Latin, *bibliotheca* + *oeconomia*, instead of from Greek, βιβλίον, *book* + θήκη, *chest* + νόμος, *rule*) to connect Library Economy with the growing social discipline of Political Economy, the original name of current Economics.

(3) Before the pioneering accomplishment of the creation of the Graduate Library Science at Chicago, Martin Wilibald Schrettinger (1772-1851), a German Benedictine monk and librarian, had coined the term "Library Science" and used it in the title of his book (Schrettinger 1928).

(4) A tangible proof of the fact that the interdisciplinary environment at the University of Chicago had a strong influence on the faculty of GLS is that Butler's book was based on the work of Dewey, John. The Sources of a Science of Education. Horace Liveright, 1929.

(5) Nevertheless, John Budd (2002) has stated that Shera's approach was more sociological than philosophical in nature and that might be strengthened by a more strictly epistemological component. In addition, Budd acknowledged that in his numerous writings Shera did not articulate a completely clear and consistent idea of social epistemology. Martínez-Ávila and Zandonade (2020) is an attempt to consolidate it.

(6) In the preface of this book, Shera wrote: "In January 1956, the Carnegie Corporation of New York provided a generous grant to the School of Library Science of Western Reserve University for the author to undertake a study

of library education". This was a very convenient information, since most library education programs in the USA received grants from the Carnegie Corporation of New York from the start of the 20th century on.

(7) However, Froehlich (1989a) has pointed out that while it is generally acknowledged that Information Science is an interdisciplinary field, the only adequate foundation for the field must be transdisciplinary, laying in social epistemology. Other relevant writings by Froehlich on social epistemology include (1987) and (1989b).

(8) In this passage, Elias employs the ancient metaphor Isaac Newton had used in a letter to Robert Hooke, who had accused him of plagiarism and Newton replied by saying: "If I have seen further it is by standing on ye shoulders of Giants", also showing the value of "literature review" at the beginning of research. This aphorism seems to have been first used by Bernard de Chartres in early Middle Ages, while Newton probably took it in from Robert Burton (1652), changing its original religious meaning into the idea of an epistemological rule of knowledge growth. Tradition made Newton this apotegma's author. John Bartlett's *Familiar Quotations* (1919) later led this dictum astray.

(9) "The new term BC was soon widely adopted by librarians and documentalists, even though Egan and Shera initially sought to replace it by "bibliographic organization", fearing that the word "control" might evoke some unwanted association with censorship. These apprehensions proved to be unfounded, and the new term was eagerly adopted by the library profession" (Wellish 1980).

(10) From a philosophical to a sociological theory of knowledge. The classical theory of knowledge and science examines what happens when the "subject", a solitary individual, thinks, perceives, and performs scientific work. Comte broke with this tradition. It seemed to him to be at odds with the observable facts. Human thought and research are much more a continuous process, extending over generations. The way in which an individual person goes about thinking, perceiving, or performing scientific work is grounded in the thought processes of previous generations. (Elias, Norbert. What is Sociology. Translated by Stephen Mennell and Grace Morrissey. With a Foreword by Reinhard Bendix. Hutchinson, 1970, Translation 1978, p. 37).

(11) While Capurro and Hjørlad (2003), citing Spang-Hanssen (2001), have suggested that it might be good for Information Science to leave the word "information" without a formal definition, the truth is that many authors from different areas have proposed definitions of information that do not seem appropriate for Information Science (many times adopted as persuasive devices and to gain status). The difference between Information Science and the several "theories of information" that have spawned from other disciplines (especially outside social-cultural ones such as computer science, engineering or the natural sciences) is that those theories are explanations for problems that are of interest in and within the specificities of those disciplines (usually in terms of physical quantities and very different problems and research questions than those that arise in Library and Information Science) and therefore they have not been useful or fruitful for research and practice in our field (in spite of the attempts to re-humanization). On the other hand, one of the perhaps most appropriate definitions of information along the lines of our article, albeit unfinished, is László Ropolyi's (2015) in which he focuses on the ontological character of signs and proposes a hermeneutic concept of information. Instead of conceptualizing information as a thing, Ropolyi prefers to see it as a relation in which "the sign-information relationship can be described using a form-content relationship. Sign is the form of the information, while meaning is the content of it. Information is a meaningful sign or a signified meaning – created by interpretation". In personal communications with Ropolyi, this author came to clarify that he used the term "sign" instead of "symbol" as the former is more prevalent in the sciences and technologies and he also wanted to reach those audiences, and also because sign seems to be more

value-neutral than symbol and value is commonly associated with meaning (the content) while he wanted to keep the form (the sign) close to neutrality.

(12) There has been strong controversy in favour and against classification. It seems that classification is losing grounds to indexation through "natural" languages. Hanson, for example, favours the following position: "Growing reliance on automated means of accessing information brings an increase in indexing and a corresponding decrease in classification. This brings about a shift from the modernist view of the world as permanently and hierarchically structured to the indeterminacy and contingency associated with postmodernism" (Hanson 2004).

(13) 2005 Merriam-Webster, Incorporated, via Babylon 10 translation software.

(14) Concise Oxford American Thesaurus, 1st ed. Copyright 2006 by Oxford University Press, Inc. Via Babylon 10 translation software.

(15) Similar approach to indexing by taking advantage of terse literature is W. J. Hutchings "Topic Statement": "The second stage of indexing, the process of reduction or summarisation of the primary thread of the text, is in one sense the converse of the process of expansion and elaboration that creates the text itself from the Topic Statement" (Hutchins 1975, p. 111). Another such approach is Dressler's "Basis-Satz" (Dressler 1974).

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