

Philosophical Approaches for Defining Information as a Theoretical Object in Information Society

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Abstract

The purposes of this paper was to define information as a theoretical by exploring the characteristics and attributes of information. In order to achieve the study goal, surveys and interviews were conducted and related literatures were reviewed and. Based on the observations, philosophical stances, attributes, problems, and approaches of information were discussed.

Keywords: *Information behaviors, Attribute of information, Information science*

1. Introduction

Today's society is defined as an information society in which information takes a major role for developing society. Currently, communication technology is highly developed and information is continuously created and distributed using technology, and the information flow greatly influences on the economic and political power of nations and organizations [19]. As information becomes important concepts in human activities, studies on information have been on demand and researchers in the field of information science have made special efforts to establish theories and practices about information related activities [10]. Since information science is still time-oriented academic areas, new study approaches and technologies keep evolving, it is now more important to conceptualize the ground theories in order to better explain the practices of information related activities. One of the main issues in the study field was conceptualizing information as a theoretical object [11]. In order to provide logical explanations about information related activities and to theorize the informative phenomena, it was necessary to clarify the attributes of information.

1.1 Problem Statement

Through the years, information studies have been focusing on describing natures and behaviors of information. Many studies claimed that information is measurable things and tangible objects [3] [4] [5]. However, there have been other claims that information is intangible and uncountable [11] [13]. There is not any clear justifications explaining information as a theoretical object and different approaches are possible to explain information and the phenomenon of information. The academic discipline areas should be logically explained and firmly grounded by theories and philosophies. Therefore, it is important and meaningful to examine characteristics of information to understand the phenomenon of information in this information society. This study attempted to explore the attributes and problems of information to find whether information is qualified as a theoretical object. In this study, surveys and interviews were conducted and literatures discussing about information were analyzed.

1.2 Research Questions

In order to achieve the study goals, two research questions were proposed; (1) *How do people perceive information?* (2) *What kinds of attributes does information has?* Based on the study results, whether information is qualified as a theoretical object is discussed.

2. Literature Review

2.1. Characteristics of Information

Robinson [15] claims that information behaviors can be described in many ways based on different foci: (1) It is a phenomena that involves in collecting, organizing data in a logical order and making them accessible for human use. (2) It is a field of scientific study, addressing the effective usage of knowledge. (3) The activities relating information include managing, maintaining, and making available to various users and make the diversity of human discourse possible. In addition, information manifests in different sources and is used for a multitude of purposes. Information science deals with information and informative phenomenon, and this it is important to discover characteristics and natures of information to define the field as science and information as a theoretical object.

According to Buckland [4] and Raber [13], information takes various forms, either tangible or intangible, and has special characteristics. Therefore, it is hard to make a clear distinction, between what is information and what is not information. Information is situational and contextual: Defined as information depends on the circumstances and situations of the inquirer, and using particular information is a subjective and personal decision. Therefore, he argues to focus on studying information as–thing to bring shape to the theoretical field. Information has three distinct meanings: information- as-process, information-as-knowledge, and information- as-thing. Information- as- process refers to what people know is changed by the process of being informed (receiving, storing information).

Information-as-knowledge refers to what is perceived in information-as-process [14]. In this case, information is intangible. Information- as-thing refers to an object (tangible), or an event (intangible) and any other things that are informative. In most cases, when discussing issues related to information, the emphasis is on attributes associated with information-as-thing. Development of information systems describes developmental phenomenon of information- related activities that mostly focus on information-as-thing because it can be organized and arranged in accordance with the system's design [12].

2.1. Philosophical Stance of Information

According to social epistemology [17], one could study the situation of information use, asking questions about the context of information needs, the kind of information needed and available in given situations that involve human problems, and the nature of information use [17]. Or, one could study the information unit itself, its nature, and its behavior [16]. When records (information) of human experience are used for the purpose of advancing knowledge and improving the conditions of human life, information science is a field that studies these phenomena systematically and empirically in order to develop a theoretical understanding of them [14]. However, while natural sciences prefer quantitative results by scientific research method, phenomena of information are too ambiguous to be explained in a quantitative way only. Budd [6] and Raber [13] point out that regardless of using qualitative or quantitative methods, there is a nature law to apply for them except for some areas such as culture. Recently, many people argue that in spite such an ambiguity, the study of information phenomenon can be a science and the problem of ambiguity can be resolved by persistence research on relate problems.

In the process of defining the field of information science, it has been challenged by epistemological stance of scientism which is a belief that knowledge or information is

provided by only scientific methods, measurement, and procedures is worthwhile [17]. Thus, people who believe in scientism put special efforts to establish the field as one of the sciences, providing theoretical and general principles as explanatory laws. Positivism is another form of scientism. Positivism is one of the recent opinions of intellectual grounding that defines information and information science [14]. According to positivism, the research method to examine the phenomenon of information is a genuine, young, and natural the methodological procedures of natural science are applicable to the field. In order to understand the specific phenomenon, essential elements of the facts and the ways in which they interact can be examined by extracting it from the complex facts. The main principles of research in information science to discover the general laws and put theories in to practice so that people can explain, predict, and control the phenomena of information [18].

3. Methodology

3.1. Research Process

Survey, interviews, and document analysis were used in this research. After reviewing the literatures, survey questions were developed by the researcher. An open-ended question was used for a focused-group interview after the survey. 5 professors who participated in the survey were selected for the interview.

3.2. Participants

20 college professors participated in the survey and 5 professors participated in the interviews. Among 20 participants, three professors were female and 17 professors were male. The participants were diverse in their study areas and teaching experiences. Table 1. Presents information about participants.

Table 1. Participants

Field of study	Female	Male
Social sciences	1	2
Natural sciences	1	4
Engineering	1	10
Art	0	1
Total	3	17

3.2. Instrument

The survey regarding perceptions of information (containing 24 questions) was developed by the researchers. The instrument was composed of three subsections: preferred reading materials, perceptions of information, and preference of information, using a five-point Likert scale (5 = strongly agree, 4= agree, 3 = not sure, 2 = agree, 1 = strongly disagree). Three specialists in library and information science reviewed the instrument to ensure the validity of each survey item. The responses to Section I (Technology competencies) and II (Attitude toward online education) were analyzed using Cronbach's alpha tests in SPSS 21, and the results yielded a reliability estimate of 0.7 for the perceptions of information section and 0.8 for the information preference section of the survey.

3.3. Data Analysis

The survey results were analyzed using SPSS 21 and the content analysis was used for analyzing interviews and literature.

4. Findings

4.1. How do People Perceive Information?

In order to find how people perceive information, survey responses and interview results were analyzed. Regarding the preferred reading styles and materials, 55% of the respondents showed to prefer reading information on a paper copy and use print-based materials for their study, instead of using information on a screen as Table 2 shows below. When analyzing the perceptions of information, the respondents perceived printed materials, ideas, data, and knowledge as information (m= 4.6, m=4.15). Regarding the attribute of information, even though the respondents perceive both objects and ideas as information, they had a tendency to think information as tangible, visible, and countable (m=3.55).

Table 2. Preferred Reading Materials

Preferred reading materials	Frequency	Percent
On a screen/online materials	4	25%
On a paper copy/print base-materials	11	55%
It does not matter.	4	20%
Total	20	100%

* Questions: (1) I prefer reading information search results ().
 (2) I prefer using () for my study.

Table 3. Perceptions of Information

(5 = strongly agree <->1 = strongly disagree)

Items	Mean	SD
1. Objects such as books, papers, journals, newspapers are information.	4.60	0.60
2. Information is tangible, visible, and countable.	3.55	1.05
3. Ideas, data, and knowledge are information.	4.15	1.04
4. Information is intangible, invisible, and uncountable.	2.40	1.5

According to the analysis of interviews, the interviewees responded that the information has both aspects. Information such as ideas, data, and knowledge are intangible, invisible, and uncountable, however, there are tangible objects such as reading materials. One of the respondents said that data consists of raw facts such as ideas, knowledge, which people can convert into information that is useful to people. People convert data into forms that people can see and count. Information is a form of knowledge that invisible factors are transformed in a way that people can understand. Information is something to make a change in our thinking. On the other hand, one of the respondents persisted that information is not something that can be distinguished with visibility or tangibility. Mostly, information is a form of knowledge. However, regardless of its shape, when it is meaningful to people, it becomes information.

4.2. What is the Attribute of Information?

In order to find the attributes of information, researchers focusing on information behaviors have been analyzed. Studies [2, 7, 8] claim that information is indeterminate as a theoretical object. Because it is impossible to quantify the flow of information. Text remains stable but text is not a representative of meaning. Representation of object is not

an actual meaning of the object. Information conveys different meaning in different contexts and the differently experienced situation produces different contexts. The ambiguity of information in its nature is at the center of the problem and it hinders conceptualizing information as theoretical object and makes difficult to do scientific research [9]. According to their claims, information is not entirely stable and this condition introduces an ambiguity regarding what to observe and how. Information is hard to identify because it is situational. The meaning of keywords can vary by time and place and by the nature of the society. The relationship between knowledge and truth is especially problem. Cultural issues in stakeholders affect the process of information and representation cannot fix the problem of culturally embedded meaning [1].

In spite of the problems described above, researchers have constantly attempted to find the ways to measure information in a physical way [6, 13, 19]. Information flow can be measured by institutionalizing the objects such as information technology on the behalf of information. In this case, the communication systems become an operation definition of information. With that method, information measures levels of economy and indicate economic and intellectual changes in society [12]. According to Oliver [12], information can be treated as a rational object. Information as a system circulate within and sustain the information ecology. It provides quite observable behaviors of information. Nowadays, information technology especially brings about electronic forms of information and speeds up the process of transfer and retrieval, providing spacious room for storage [18]. In this manner, information can be quantitatively measured and categorized and thus eligible as a physical thing.

5. Conclusions and Discussions

According to the study, people prefer print based-materials for their reading and study to reading information on a screen. However, regardless of the preferences, they strongly believed that information has both aspects in terms of tangibility and visibility. They also perceived that facts becomes knowledge when those are meaningful to users. The knowledge is one form of information. Based on the observations above and reviewed literatures, there are two different theories (paradigm/metaphor) possible regarding the phenomena of information: one in which information is regarded as a physical object, and another in which it is regarded as a cognitive phenomenon. The observations of two different concepts are based on human experience and discourse with information. There are still controversial issues whether those phenomena are paradigmatic or not, or should it be considered as metaphor. Regardless of these controversies, one obvious fact is that the combination of both, physical and cognitive perspectives should be dealt inclusively in order to achieve the goals of information science: generating knowledge of information to understand what it is, what it does, how it behaves, and why.

Science is a process not just a product. Human behavior is tangible and measurable in a physical and quantitative way. It can be observed, predicted, and theorized about as with any other natural phenomenon. The existence of phenomena can be conceived and described in a variety of ways should be considered when determining the attribute of studies. From the same aspect, it is not clearly defined if information behaviors should be interpreted as a cognitive phenomenon or measurable activities, and if it is totally qualified as a theoretical object. Yet, it looks natural to be ill-formed in theories. However, many controversial issues like this topic is expected to constantly occur in order to build firm theoretical grounds as other disciplines do. As a conclusion, the answers to the question about information as a thing still seem to be in the process of forming through defining the object, systematizing methods, and building history.

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