

Issues Paper
A critical analysis of Richard Diener's conception of
Information Science

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Introduction

Information science is a very unique field of study. It is young and burgeoning, but its focus is broad and moving so quickly that the fundamental ideals and principles are lost in a haze. Information authorities still disagree on what their field of study concerns, heretofore the definition of information and information science is lost. To provide further discussion on this topic, I will conduct a critical analysis of Richard Diener's (1989) controversial article entitled, "Information Science: What is it?... What should it be?" I will provide my analysis in four parts: (1) Diener's fundamental ideas, (2) Criticism, (3) Diener's defense, and (4) My view of Information Science.

Diener's fundamental ideas

Diener's (1989) basic premise is that "Information science should be the science that studies information!" He then proposes four fundamental ideas about what he considers to be information. They are as follows:

1. Information is an entity; but a thing that exists without mass or energy.
2. Information, per se, is not a component of the physical universe of matter and energy. It is not constrained by the law of the conservation of matter and energy. It is intangible and can be reproduced without loss of content or meaning. To seek to understand information using the mindset, theories, research, methodologies, hypotheses, and/or data analysis techniques of the physical sciences is, therefore, fundamentally flawed.
3. Information exists primarily in the societal universe; the domain of human and societal, interaction. Given the general weakness of sociological research methodologies, however, I do not suggest that they should form the basis of research in the science of information. Because information is so fundamental to sociality (it is ubiquitous to all human and societal interaction), we need to develop our own general and specific theories, hypotheses, research methodologies and units of measure.
4. Some of the properties of information that make it unique, and so difficult to understand, are: a) as mentioned, it is an intangible entity not made of matter or energy; b) by corollary, it can be reproduced and shared without loss and may even be enhanced through use; c) it has veracity or at least a relative truth value; (d) it has a life cycle and is ephemeral; and (e) it must be processed to exist, for the members of a society to totally cease to remember an item of information spells its permanent loss; and (f) it exists in

two states: subjective (in the mind as “image”) and objective (in the society as “language”).

Criticism

Diener’s article, published in the June/July issue of the *Bulletin of the American Society for Information Science* in 1989, sparked some critical responses and opposing opinions from other information authorities. He precedes the four main points in his article by saying, “In the hopes of spurring some heated discussion, I will propose some fundamental ideas about information.” This suggests that he is prepared to take criticism. The critical responses I will focus on stem from articles by Bohnert (1989), Kraft (1989), and Buckland (1991). After showing arguments against each point, I will provide my criticism of Diener.

Arguing point number 1

Diener’s (1989) idea that information exists without mass or energy is an idea that Bohnert (1989) argued against in her article entitled, “Information Science: What is it?... Why not try information retrieval again?” The American Society for Information Science (ASIS) published this article in the issue of the *Bulletin of the American Society for Information Science* directly following Diener’s article and she argues the following:

“To be studied in the real world, ‘information’ has to be some kind of physical event or entity.” (p. 18).

Three years later, Michael Buckland agrees and actualizes Bohnert’s statement with his article and concept of information-as-thing. Buckland believes that information exists in three forms: information-as-process, information-as-knowledge, and information-as-thing. His definition for information-as-thing is as follows:

The term “information” is also used attributively for objects, such as data and documents, that are referred to as “information” because they are regarded as being informative, as “having the quality of imparting knowledge or communicating information; instructive.” (p. 351).

Further, Buckland would disagree with Diener because he believes that, “information storage and retrieval systems can deal *directly* only with ‘information-as-thing’” (p. 359).

Arguing point number 2

Diener (1989) restates himself in point number two, by saying that information is not a component of the physical universe and then moves on to say information is intangible and can be reproduced without loss of content or meaning. Bohnert (1989) counters this argument by saying Diener’s claim has become a cliché and that he contradicts himself later in his article by saying, “it has a life cycle and is ephemeral.” (p. 18).

Further, he claims that the physical science methodologies are fundamentally flawed. This is very strong language that discredits other valid scientific methods and Bohnert (1989) says in her article that she “would prefer to say that it is not sufficient in dealing with ‘information’ of the information scientists.” (p. 18).

Arguing point number 3

In point number three; Diener states yet again that other research methodologies should not form the basis of information science research. In this case, he points to sociological research because information exists primarily in the societal universe. He suggests that information science needs its own theories and methodologies.

Kraft (1989) opposes Diener's statement by suggesting in his article that "clearly, information science needs to establish an identity, one involving many other disciplines, including psychology, linguistics, cognitive science, computer science, sociology, management science and library science." (p. 13).

Arguing point number 4

In his fourth point, Diener (1989) presents properties of information that he considers to make it unique. Some of these sub points are restatements of points he made earlier, but he presents two new ideas as shown below:

(e) it must be processed to exist, for the members of a society to totally cease to remember an item of information spells its permanent loss; and (f) it exists in two states: subjective (in the mind as "image") and objective (in the society as "language").

Diener is right when he says that information must be processed to exist, but Bohnert criticizes this statement by saying, "This is true, but he does not tell us how and whether by or for information scientists. Necessarily our 'information' must already exist as a physical entity before processing becomes our responsibility." (p. 18). Further she goes on to criticize the idea of information's permanent loss. She goes on to ask rhetorically "Surely he should have written that either a failure to record an item of information or to care for the record leads to its permanent loss?" (p. 18).

As for existing in only objective and subjective states, Diener is again disregarding the existence of information in physical form.

My criticism of Diener

Although Diener's article asks the question of what information science is, he does not clearly answer the question. Instead, he goes into defining properties of information and avoids tackling his question at hand. He suffices to say, "no coherent, accepted, standard answer has been forthcoming." (p. 17). Further, he goes to say, "Information science without a fundamental core of theory of information, research methodology suitable for studying information, data analysis techniques that work, and so forth will ever remain a discipline that simply manages information without ever understanding it." (p. 17). Considering the content, he should have entitled his article, "Information Science: What does it study?"

Diener's defense

Diener, possibly aware of the criticism of his article, published a follow-up article entitled, "Information Management: An Application of Information Science." There, he starts to argue in his defense as follows:

In an earlier issue of the *Bulletin* (Vol. 15, No. 5, June/July 1989), I addressed the question, “What should Information Science be?” My point there was that Information Science should become a science in its own right with its own definable and measurable concepts, its own theories and hypotheses, and its own philosophical foundations. It should not be an amalgam of ideas, theories, and methods from related disciplines. If we use, for example, psychological theories, concepts, and methods to study informational phenomena, we are doing psychological research not information research. (p. 17).

He finally answers the question of what he considers Information Science to be, but then instead of defending his previous point that information is an entity that exists without mass or energy, he credits Woody Horton and his staff on the Commission of Federal Paperwork for identifying “information as a resource.” This seems to equate to Buckland’s (1991) concept of information-as-thing. This completely discredits the position he took in his earlier article.

As for the criticism he received from Bohnert (1989) and Buckland (1991), he might point to this statement from his first article, “In information science, we are preoccupied with “objective” information: books, words, reports, articles, records, computer data, and other physical manifestations.” (Diener, 1989, p. 17). He might say that he obviously does acknowledge the existence of this sort of objective information, but he does not hold it to consider it to be the information itself, merely a representation.

My view of Information Science

Considering all of the differing opinions, I believe that information is something determined by personal interpretation. The same object could give two people entirely different information depending on a great many factors including culture, vision, hearing, etcetera. For example, in the Korean culture, there is a tendency for teachers grading papers to circle the answers that are right. In American culture, circled answers usually mean that the answers are wrong. This shows that the same physical representation can suggest different and in this case, directly opposite information. This is why the physical representation is not the information itself; it is merely a representation of mental information that one is trying to portray.

In regards to the field of information science, I believe that it is a field that needs to work hard to gain acceptance among other sciences. It is difficult for many to accept information science as a legitimate science because it draws from so many other disciplines. Some merely see it as a way to combine theories from other disciplines to actualize and manipulate human knowledge. One argument would be, “don’t scholars from other disciplines do the same work that is done in information science?” As far as I know, I would have to say yes; sometimes yes, but schools like the information school at the University of Washington approach information from a user perspective. This means that in the development or renovation of any information system, the information school will involve the user throughout the whole process and keep the user’s priorities at heart. This is what makes information science unique and sets it apart from other disciplines.

References

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