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Shannon Goes to the Museum: Drawing Lines Across Boundaries

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Preface

The DOCAM'15 theme called for an examination of the challenges ahead with our understanding of documents in a continuously changing information landscape. One such challenge has been to find specific intersecting areas of the information sciences on which authors from different disciplines might collaborate. We take ourselves as one such case study. One of us works in information science and often thinks about applications of Information Theory. One of us works on developing models for museum practice, that is, theory upon which museum work might become more intentional and robust. Thinking about *Documents Unbounded* has led us to align some of our recent work, and, by doing so, demonstrate that manifestations of information theory abound across the information disciplines, which have origin in and continuing relevance with the document, museum, communications, and library studies realms. In this philosophical experiment, we try to draw lines between Wood and Latham's (2013) Object Knowledge Framework (OKF) and O'Connor, Kearns & Anderson's (2008) notion of Question (Q), in order to make some assertions about drawing lines between disciplines. In doing so, we draw attention to the fact that many "user-centered" models are actually about person-document-centered scenarios, and to focus on only one side of the situation, may be one-sided and incomplete.

An Opening Scenario

To begin, we start with a short scenario of one person's exhibit experience at a museum. We will revisit this vignette again later in the article.

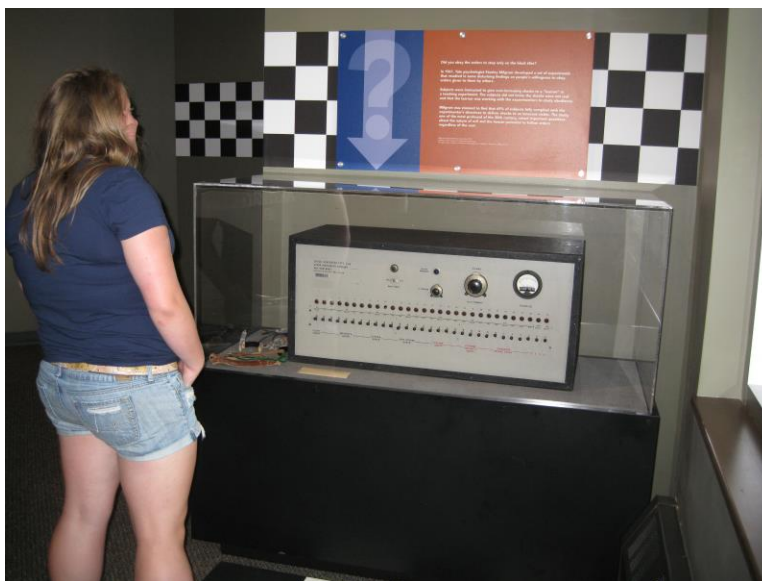


Figure 1. A visitor looking at the Simulated Shock Generator exhibit.

A museum visitor goes to the Cummings Center for the History of Psychology's Museum of Psychology and sees artifacts arranged in an exhibit on Stanley Milgram's 1960s experiments on obedience. She is alone today and has stopped into the museum because she has always been interested in psychology. The visitor approaches the exhibit, attracted by the bold black and white designs around it. She sees a box with levers and lights; it looks familiar, but she doesn't quite know what it is. The visitor then reads the text panel above, where she finds that the box was used in an experiment where participants were assigned roles as "teachers" and "students." Seated on opposite sides of a test room, the "teacher" asked questions, and when the "student" answered incorrectly, the teacher was instructed by the experimenter to deliver an electric shock to the student using the infamous Simulated Shock Generator—the box! As part of the experiment design, no shock was actually delivered because the "students" were actors. However, not knowing this, many "teachers" were willing, some hesitantly, to administer shocks well into the "severe shock" range, when told to do so by the person in charge. The visitor imagines being in the role of the "teacher" and wonders if she would do the same thing? She looks at the box again, more carefully this time, noting the words above each lever, following the increase in voltage that it indicates. She imagines a "teacher" flipping one of the highest voltage levers and what it made the "student" do. The visitor is startled to learn that 65% of the subjects in Milgram's experiment with the Simulated Shock Generator fully complied with the experimenter's directives to deliver shocks to innocent victims. She says out loud, "Would I?," as she realizes the implications of the famous experiment—that she is likely to be someone willing to flip that switch and deliver a lethal shock to someone because an authority figure told her to do it.

Introduction

The goals of this paper are to outline two models—one from museum studies and one from information science—*Object Knowledge Framework* and *Question*. In that process, we will “draw lines” between them indicating similarities, in order to understand more fully where the two intersect. Both models represent the information world as viewed by each set of authors. Drawing lines between the models offers some security that the illustrated phenomena are not specific and derivative to one field of study and practice, but, in fact, suggest fundamental similarities and connections between museum studies and information studies. We aim to show that there is an essence of human experience that both models, from their respective perspectives, describe. Both models address engagement and

experience with documents; both fields have theoretical and practical sides. After drawing lines, we aim to show that these theoretical models function in practice.

In brief, our goals are to

1. Identify and explain two emerging models from two fields
2. Draw lines to show connections between these models
3. Identify that the connective tissue of both models—the essence—is human experience with documents
4. Consider this essence of human experience with documents in practice

Two Emerging Models

Object Knowledge Framework

The Object Knowledge Framework (OKF) was developed to define a process by which people come to know objects--in museums specifically, but also, in the world at large (see Wood & Latham, 2014). The OKF, derived from a phenomenological lens, focuses on the relationships between three elements of a museum object encounter: 1) what the visitor brings to the experience (“person lifeworld”); 2) how the museum positions or transforms the object in that encounter (“objectworld”); and 3) the results, if the conditions are right, when the visitor and the object meet in the museum context (“unified experience”) (Wood & Latham, 2014). Both the visitor lifeworld and the document’s objectworld consist of three dimensions: individual, group, and material. These dimensions are like different windows on the world: the view from each provides a slightly different angle of perception, even though all exist always at the same time. Each dimension, and their various combinations, represents the many different ways to know objects. A visitor takes in the information and makes meaning through his/her own lifeworld (made up of individual, group, and material histories) of the encountered objectworld (which has its own set of individual, group, and material features). The intent of the model is to illustrate the complexity of these relationships and by doing so assist in the realization of a unified experience. In museums, the unified experience is an ultimate effect—it is a powerful and meaningful, hopefully memorable, experience in a museum. But the unified experience can represent smaller moments of meaning-making as well.

Also important to this model are the concepts of intentionality and transaction. Intentionality is a phenomenological term that refers to the interwoven nature of person and world; people exist in a world filled with objects (Sokolowski, 2000). We have different sorts of relationships with these objects; some are familiar, some are not. When an object is not recognized, it cues an increased awareness in the viewer. This acute awareness is called consciousness, the process of making sense of unusual perceptions. The concept of transaction

used here comes from the philosopher, John Dewey and his colleague Arthur Bentley (Dewey and Bentley, 1949). A transaction occurs when the object (document) and subject (user) come together in a moment and merge rather than exist as two separate entities. This is very different from an interaction (as defined by Dewey and Bentley (1949)), which is the moment wherein a person encounters a thing (document) and does something with it, each of them remaining separate (Jackson, 1998). A unified experience, as defined in OKF is a transaction. In this sense, a unified experience is a moment that can exist only by blending the person's lifeworld and the sensations, perceptions, and awareness they have of the object with the qualities and features of the objectworld. Most museum encounters seem to fall in the interaction category; a transaction being less common but far more memorable.

The purpose of the OKF is to define a process by which people come to know objects (or, documents) in a museum space, and in the world at large. Figure 1, below, represents the relationships of these three elements of the OKF.

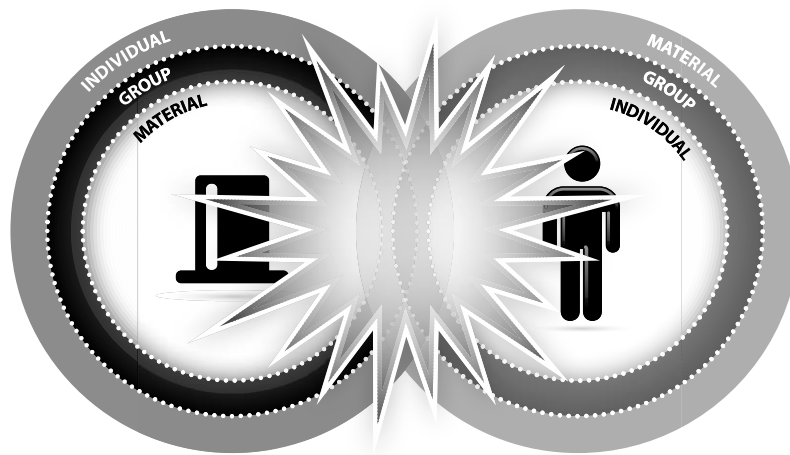


Figure 2. The Object Knowledge Framework: Document Objectworld + User Lifeworld, showing the Unified experience, a transaction, at the meeting of the two

Question

The question model was developed to explore the complexity of asking questions as a human activity central to information science. For example, one sees questions at the roots of information retrieval with query design and exploration; in indexing and abstracting, as ways to point to and to draw out document aboutness in order to help readers locate suitable documents; as the reason every

library has reference specialists who helps connect patrons to the documents where their answers might be; and in information literacy practices that encourage learners to express questions clearly before jumping into to related and necessary search skills and databases. *Question* (Q) is central to information science.

In 2008, O'Connor, Kearns, and Anderson address *question* in the preface to their book *Doing Things with Information*. Defining *question* in the front matter ought to structurally represent the essential nature of Question to the field of information studies. *Question* is the field of intersection where high-entropy document information meets document meanings that fail to assemble with an information seeker's template for understanding (2008: 20). *Entropy* is a measurement of the amount of, or rate of, exchange of information in a document. Low-entropy indicates high predictability, low surprise, less confusion; high-entropy, then, is unpredictable, surprising, and confusion. Entropy, in this sense, is derived from Claude E. Shannon and Warren Weaver's *The Mathematical Theory of Communication* (1949) which emphasizes the structures of the communicated messages, rather than the content of the message itself. Anderson (2005) asserts that every communicated message is a binary relationship of content and form.

This description helps us understand that parts of the *Question* model of high entropy messages that intersect with document templates and user templates. *Document Templates of Function* are all possible meanings and functions of the document. The phone book, if one still has it lying around, is a useful place to find a phone number of a local business. It also works smashingly as a booster chair to help a small child sit higher up to the dinner table, or as a fly swatter – all possible meanings and functions of a document. *User Templates of Meaning* are, essentially, everything in the user's brain, including experiences, knowledge, and lacks of knowledge (O'Connor, Kearns & Anderson, 2008). What one knows or doesn't know. What one has experienced and learned. All one has heard and stored away without quite assimilating it into one's body of knowledge.

Question is the field of intersection where high-entropy document information meets document meanings that fail to assemble with an information seeker's template for understanding (20).

Drawing Lines

After working together on many projects over the years, we became interested in trying to sort out our conceptual differences. It seemed that we often agreed on many broadly stated document issues but could not reconcile the finer details, including our terminology. While this exercise is far from simple, when comparing the two models each of us has used in our work, it turns out that we may be referring to similar constructs; our models are different, but we are interested in the same thing. For instance, *person lifeworld* and *user templates* are

for practical purposes equivalent, as are *objectworld* and *document templates*, except that in OKF, emphasis is on experience with the document by museum users and in Q, emphasis is on the situational functionality between the document and the questioner.

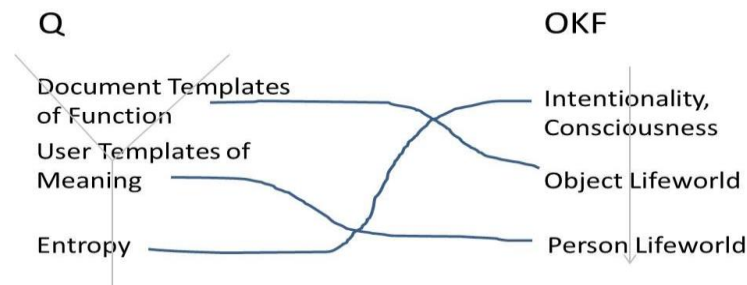


Figure 3. Drawing lines between central concepts in Question and the Object Knowledge Framework

As we dive deeper into the models, we can see that even the finer details match up. For instance, the OKF notions of intentionality and consciousness—that we live in a world surrounded by things and that only when something is unusual or not recognized cues in consciousness—may also be described as a high-entropy encounter as defined by the *Question* model. Drawing from OKF, entropy might be the “tension that comes from the experience” (Wood & Latham, 2014 55) and the visitor’s attempt to make sense of the object as it has been dressed for the museum exhibit. Any noise on the communication channel (for example, environmental distraction, design distractions, gaps in clear communication of the object lifeworld, etc. could inhibit a clear transmission of the intended message.

In Q, derived from *The Mathematical Theory of Communication* (Shannon & Weaver, 1947), message and meaning are separate. The message is the information (document/object in OKF), or the physical structure or data stream, where meaning is necessarily generated only by the recipient of the message (person in OKF). Wilson (1960) used the word “transintentionalityⁱ” to describe that meaning comes from the recipient; it is not built into the message. The unified experience, expressed in OKF, makes a similar distinction that the object and the treatment of the object send a message, but that meaning emerges from the museum visitor and the experience.

In a 2004 study also rooted in Shannon’s seminal work (1949), Kearns & O’Connor use the phrase “dancing with entropy” to describe the relationship between message senders and message receivers. Messages are not always sent specifically to the receiver. For example, William Shakespeare did not write *Twelfth Night* with me in mind. He might even be surprised to learn that his

message is still being received almost 500 years later. “Dancing with entropy” is a metaphor for effective communication inasmuch as it “depends on knowledgeable partners” (Kearns & O’Connor, 2004,146). The message sender [that is, the Elizabethan playwright, the alpine yodeler, the lighthouse keeper, caretakers of the Old North Church] presumes to know some things about the person who might receive the message [Queen Elizabeth I, Austrian herders, maritime pilots, Paul Revere]. The message receiver necessarily needs to know something of the code for understanding the message. In OKF, the space of the effective dance is potentially transactional; the document (the play) brings with it multiple dimensions of its objectworld. The viewer or receiver exists in her own lifeworld and when she comes to witness *Twelfth Night*, she interprets, makes meaning, through the filters of the objectworld and her own personworld. In Q, the field of intersection occurs because someone makes sense of the interactions between the elements.

Likewise, a transaction according to OKF is a coming together, a fusing of subject and object. In *Question*, the connection between templates of understanding and templates for function could result in a transaction.

The Opening Scenario Revisited

Below, we return to the museum visitor at the Museum of Psychology and her visit to the exhibit on Stanley Milgram’s 1960s experiments on obedience. Below each segment of the visit, we show where Q and OKF intersect.



Figure 4. A visitor looking at the Simulated Shock Generator.

A museum visitor goes to the Cummings Center for the History of Psychology's Museum of Psychology and sees artifacts arranged in an exhibit on Stanley Milgram's 1960s experiments on obedience.

She is alone today and has stopped into the museum because she has always been interested in psychology.

Q: user template for understanding

OKF: person lifeworld, individual dimension

The visitor approaches the exhibit, attracted by the bold black and white designs around it. She sees a box with levers and lights; it looks familiar, but she doesn't quite know what it is.

Q: high entropy

OKF: consciousness, object lifeworld (material dimension)

The visitor then reads the text panel above, where she finds that the box was used in an experiment where participants were assigned roles as "teachers" and "students." Seated on opposite sides of a test room, the "teacher" asked questions, & when the "student" answered incorrectly, the teacher was instructed by the experimenter to deliver an electric shock to the student using the infamous Simulated Shock Generator—the box!

Q: document template for meaning and function

OKF: object lifeworld (group dimension)

As part of the experiment design, no shock was actually delivered because the "students" were actors. However, not knowing this, many "teachers" were willing, some hesitantly, to administer shocks well into the "severe shock" range, when told to do so by the person in charge.

The visitor imagines being in the role of the "teacher" and wonders if she would do the same thing?

Q: field of intersection

OKF: person lifeworld, individual dimension

She looks at the box again, more carefully this time, noting the words above each lever, following the increase in voltage that it indicates.

Q: document template for meaning and function

OKF: object lifeworld, material dimension

She imagines a “teacher” flipping one of the highest voltage levers and what it made the “student” do.

Q: document template for meaning and function; user template for understanding

OKF: object lifeworld, group dimension

The visitor is startled to learn that 65% of the subjects in Milgram’s experiment with the Simulated Shock Generator fully complied with the experimenter’s directives to deliver shocks to innocent victims.

Q: high entropy

OKF: consciousness

She says out loud, “Would I?”

Q: field of intersection

OKF: person lifeworld, individual dimension

as she realizes the implications of the famous experiment—that she is likely to be someone willing to flip that switch and deliver a lethal shock to someone because an authority figure told her to do it.

Q: user template for understanding

OKF: person lifeworld (individual & group) transacts

Connective Tissue: Human Experience with Documents

Our process of connecting models connects two fields of study, but, more significantly the connective tissue between models, and between these disciplines, reveals the essence of both—human experience with documents. Even though we speak from two different fields, we are pretty sure we are discussing the same thing. And like connective tissue in an organic body—tissue that connects, supports, and surrounds other tissues and organs—theories connect the disciplines that ought to be using knowledge of human experience with documents to model practice. The emerging models presented here, represent only one point of view from each field. There are, of course other models in both fields offered to describe human experience with documents; in fact, there are other disciplines that provide similar models as well. Our purpose in using these models is to show that the lenses into the relationships between museum studies and information science are both describing and explaining the relationship between humans and documents and that we are talking about person-document centered situations and not “user-centered situations.” The popular moniker, to be “user-centered” in today’s institutions is actually one-sided, only focusing on one half of the

situation. Many museums, archives, and libraries claim to be visitor- or user-centered, but could it be that what they really mean is that they are transaction-centered? In both scenarios, a person's experience is always *with* something, never standing alone. A hospital can be user-centered because everything really is about the user, not the user *with*. But in a museum, library, or archives, the encounter, moment, experience, situation is always a person *with*...a book, a website, a manuscript, a letter, a CD, an object, an exhibit, a text panel, and so on. A museum is not a museum without visitors, nor is it a museum without museal things to encounter. And a library isn't a library without visitors, it's just a building full of books and computers.

Human experience *with* documents is at the core of both fields. Disciplinary-specific experiences can be problematic when the experiences are similar but in different situations. However, we as field-experts focus intently on our situations of interest and in that process, often make distinctions out of institutions. Yet the lines we have drawn between the two models (representing the two fields) reveals an essential human characteristic that connects two traditionally separate fields of study. This is the reason museums and libraries should be connected disciplinarily: because there arises a similar experience with documents, no matter the collection or site where the experience happens.

Libraries, museums, archives, and other collecting institutions are by definition centered on the *relationships* between documents and people; that is, person-document-centered. What degree of difference might this make in services at these institutions if they come to understand that they are not user-centered, but rather, transaction-centered? What if these institutions come to realize that their field of work involves an essential relationship between humans and the physical world around them, that their focus should be on these relationships rather than emphasizing one or the other?

Using the Understanding of Human Experience with Documents in Practice

We began this exploration with the hope of moving closer to helping practitioners see value in intentionally anchoring their practice in theory (Wilson, 1977), and what unfolded was much more.

Patrick Wilson, in his 1977 essay *Public Knowledge Private Ignorance: Toward a Library and Information Policy*, advises us who work in libraries that policies and programming ought to be based on an understanding of behaviors of the people who use the collection, which, he adds, "requires more than statistics

on the actual use made of libraries and other information sources” (vii). He argues that all library practices should be rooted in a clear understanding through systematic investigation of the whole library experience. *Practice rooted in theory* is the mantra of Wilsonian enthusiasts. Wilson was a professor and dean of the School of Library and Information Studies at the University of California, Berkeley, so his essay addresses traditional practices in libraries. Applying the advice of *practice rooted in theory* should therefore seem effortless in the museum context.

We want to think about drawing lines between models in ways that emphasize practice rooted in theory. That is, what is the benefit to practitioners and users of thinking about OKF and Q in a practical sense? Models describe phenomena. Understanding how models describe phenomena can help us, for example, design exhibits and programming that foster deeper engagement with documents.

It is useful to think of the connective tissue of human experience with documents outside the collecting institutions of libraries, archives and museums, in order to step away from institutional traditions. As such, we have many questions that merit further exploration in order to understand these relationships better.

Conclusion

The goal of the current exploration has been to align two emerging models that address engagement and experience with documents in order to understand more completely how museum studies intersects with information science. Both models have theoretical bases and are put into practice.

Museum professionals would be prudent to use library and information literature; the reverse is true of information professionals. What we have shown here is that models emerging out of disciplinary endeavors actually describe a human condition that is free of these parameters. Reaching out to professionals along the lines might enrich practices for both fields and their understandings of the experiences of people connecting with documents.

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ⁱ Not to be confused with phenomenology's notion of intentionality