In the Spirit of Collaborating

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Abstract

A field is judged by the questions it addresses. We believe that the i-field is at a critical juncture that is defined by increasing standards for profound, value-added insight as technology becomes more ubiquitous. While we see value in focusing on the "I" more than the "T" in IT, we believe that profound insight will only come through a deeper understanding of the intersection among human beings, information and technology. We see the basic goal of our field as helping to facilitate interactions among individuals, groups and "information" through more informed design of technology. We assume that human beings are fundamentally social beings and both information and technology to be artifacts of human experience proffered in the spirit of collaborating. We begin with a discussion of collaborating and communicating behaviors which are inherently linguistic (broadly cast) and - we believe, by definition - functional in nature. This position is logically prior to artifacts or any technology associated with the creation, dissemination, storage, retrieval or other processing of “information.” We argue, for example, that it is insufficient for our field to bound a domain after artifacts are created – we must become engaged in the creation of artifacts, specifying how the artifact will be useful to the user (either at present or in the future), and for which problems/situations the artifact is pertinent. If one assumes an active user focused on addressing their own needs as well as those of others—as opposed to a more passive stance generally made by many of the traditional behavioral fields—then insight into artifact creation, use and re-use will not only result in profound insights into the human condition, but more informed system design. We humbly invite you to collaborate with us in this endeavor. We feel that it is not only critical to intensify this discussion, but both timely and necessary.

Introduction

In the twelve years since the introduction of the World Wide Web (April, 1995), we have seen dramatic changes in technology that have allowed for a plethora of collaborative environments and new means for communicating to emerge. This, in turn, has generated a plethora of new artifacts that we call “information.” These technological artifacts are a direct result of specific and ubiquitous human behaviors manifesting themselves in seemingly distinctive ways. These changes increased the salience of a set of formidable and—we argue—distinguishing phenomena our field is now addressing. This paper is a preliminary attempt to re-frame the discussion about our (broadly cast) collective research agenda around these phenomena.

Vannevar Bush (1945) posited the ultimate information retrieval mechanism, which he called the “memex.” Memex organized content in a collection based on “associative indexing.” In his view, “associative indexing” would permit retrieval based on association and context rather than strict categorical indexing. Bush’s efforts have been seen as the conceptual framework for subsequent work on hypertext, which is the central data metaphor for the digital age. We view this as a good example of a technological focus absent insights into human or user behavior. For example, Bush did not specify the nature of the associations among nodes in the hypertext. We believe that functional associations
between what information is *about* and how the information might *help* a user is a logical source of insight into Bush’s associations. In other words, we believe that the source of the association that Bush alluded to is at the intersection of the information artifact and its benefit, or derived use. The purpose of this paper, however, is not to specifically criticize or extend Bush’s ideas or to recast general ideas about a research agenda that is more about the “I’’ then the “T” in IT. Rather, we wish to raise the question of whether or not moving the focus to the “I” is going far enough to define our field in such a way that it will lend insight into fundamental issues like those brought up by Bush over 60 ago.

Our intent is to explore the beginnings of a coherent conceptual framework that is derived from a fundamental understanding of what leads human beings to collectively *create, use* and *re-use* our experience when addressing life’s challenges. We assume that these collaborating behaviors are fundamental to being human and are exhibited by people communicating experiences and understandings with each other. These fundamental behaviors inevitably result in constructed artifacts that are necessarily constrained by the functionality of technologies designed to generate, access and disseminate information. We believe that the *i*-field is uniquely positioned and capable of gaining profound insight into these fundamental behaviors *only if* we adopt a truly interdisciplinary stance that incorporates the “I,” the “T” and the “H” (i.e., the human being) when trying to understand the whys and hows of creating, using and re-using information.

In a recent article which surveys the two seemingly definitive areas of “Information Science” (exemplified by the *Journal of the American Society for Information Science and Technology*) and “Information Systems” (exemplified by the *Journal of Information Systems Research*), Sawyer and Huang (2007) put forth the following:

> We speculate that scholars in [information systems research] need to be more explicit about its basic constructs (even to the simple level of articulating the range of possible ways to characterize these basic constructs) to more easily connect to, and to be understood by, other disciplines (Sawyer & Huang 2007: 1444).

Sawyer and Huang (2007) seek to find common ground among researchers within the fields of Information Science and Information Systems. Their purpose is to gain some insight into how scholars might increase collaboration both within and between fields. Additionally, they are interested in better understanding how to build bridges between these fields and others. We believe that their interest in gaining insight into these collaborating behaviors actually illustrates the “basic constructs” they seek. We do not view this as a coincidence given they are “IS” researchers who have positioned themselves within the larger “i–field,” which we view as being composed of—at least—Information Science, Information Systems and Library Science researchers. We posit that those who view themselves as being tied to the *i–field* share a common interest in collaborating behaviors and technologies that support these behaviors (see how we define our broad use of the term “collaborating” below) and that these interests converge on phenomena associated with these behaviors that characterize the field. It seems that it is an interest in these phenomena and these technologies from which all inquiries into the IT artifact, IT *per se*, individual, social or organizational processes, representation, retrieval, transfer, etc.
emerge. We suggest that the increase in the salience of these characterizing phenomena are a direct result of using technology to communicate and collaborate at all levels of an increasingly intertwined global environment.

Further, we suggest that one of the profound impacts of IT is not derived merely from its wide scale adoption, but from the resultant increase in salience of collaborating behaviors embedded within every social environment. For example, we are now able to point directly to a set of artifacts (e.g., e-mails, IM messages, blogs, etc.) written by various individuals who are collaborating to solve a specific problem and validly view it as evidence of a “team” or “community.” Yet, not a single face-to-face interaction among their members is required before doing so. Those within the i-field are uniquely positioned to explain why this characterization is valid and why it can be reliably made across all contexts in which humans interact. Most importantly, this brings the field beyond explaining how or why technology enables this type of human interaction—explanations that are seemingly self-evident to many simply because IT is becoming embedded in peoples’ daily lives and business process. In other words, the fascination with technology is fading and potentially turning more towards an expectation of more connectivity. Beyond the “I” and certainly the “T,” we believe that IT has worked to illuminate who we are as humans and that the emergence of the i-field is a direct result of a common interest in this. It is insight into who we are (as a field) that will:

1. create the gravitating effect discussed by Sawyer and Huang (2007),
2. uniquely define what it means to be a researcher in the i-field to those in other fields as well as the world, and
3. lead to better design of systems and technology (e.g., organizing artifacts according to Bush’s (1945) notion of “associative indexing”) which will in turn enable those in the field to have a more profound impact on the world (let alone other disciplines).

Our field has dedicated a great deal of time and energy examining content and its technology in the last fifteen years, but we believe that we must commit significant resources into understanding human beings and their behavior from a more functional and purer user-based perspective. This perspective differs from those of many other fields focused solely on behavior—and potentially viewed as being focused on the user as well (e.g., those within the psychological, economical and political science fields)—by viewing the user as an active and creative participant who is actually working towards constructing their environment as opposed to a more passive participant merely reacting to their environment. We are certainly not alone in this view (e.g., Dervin & Nilan, 1986; Saracevic, 1997; 1999; Sawyer & Huang, 2007).

There are many ways to re-frame our research agenda. One is to conceptualize the artifacts that we call information as byproducts of various attempts by human beings to collaborate and share experiences with each other. Some already under way include applying pre-digital solutions to digital content (e.g., meta language classification of web pages), others are uniquely digital solutions (e.g., natural language processing for “filtering”) and still others are a blend of the pre-digital and digital (e.g., folksonomies). We offer a perspective
that has emerged out of a juxtaposition of the so-called “user-based,” cognitive and social
cognitive approaches (Nilan & D’Eredita, 2005; D’Eredita & Nilan, 2007) and believe that
it also works to illustrate the focus of inquiry discussed above.

What follows is strictly an illustration of how we frame our research within the i-field as
discussed above. It is important to note that we do not view the perspective we put forth
below as exemplary of the i-field. We believe that the common ground we share with all i-
field researchers is in our overarching assumption of an active user and our interest in
collaborating behaviors and how to realize the potential of IT to support these behaviors.
It is from our interest in collaborating behaviors that we believe we can begin a dialogue
with any researcher considered to be part of the i-field as well as those who are not.
Below, we put forth the foundation of our research on collaborating behaviors. We
differentiate ourselves from other researchers within the field by relating information to
human collaborating about specific situations or problems (discussed below). It is also
important to note, that our anchoring curiosity in specific types of collaborating behaviors
allows us (a linguist and cognitive psychologist by “trade”) to work in a complementary
and fulfilling manner. From our perspective, our “home disciplines” only add perspective
to the more important common phenomena in which we are interested in gaining insight.

It is in the spirit of collaborating that we present this paper. Our primary motivation is to
see if others are able to frame their research within a field focused on all aspects of human
collaborating behaviors. We begin by defining key terms relevant to our own research
agenda, but seemingly relevant to a number of others as well. We then discuss how our
agenda has and continues to unfold over time and how it relates back to the i-field-specific
themes discussed at the beginning of the paper. Given our discussion above about the
field, we continue with some discussion on the nature of our inquiry into collaborative
behaviors in order to give a sense of the flavor of our discussion.

Our Anchoring Definitions

“Collaborating” is the social coordination (largely communicative) through which human
beings observe their environment and solve problems/address their life situations.
Conceptually, Carter’s (1980) “social Darwinian” description of human existence
argues that humans have an observing and a moving capability. Those individuals
who observe and move effectively will prosper. Through collaborating, individuals
can substantially improve their individual observing and moving capabilities. Two
heads are better than one; together we are stronger. It is through linguistic
communicating this basic social stance is manifest, i.e., we inform one another to our
mutual benefit. The artifacts we generate in this communicative process, however
distorted by structure (e.g., publication or broadcasting constraints) is what we have
been calling “information” (further defined below).

“User-based” refers to an epistemic position (i.e., what can be known about being human)
that validates the reality of human beings as they perceive it as a foundation for the design
of systems (e.g., a series of steps intended to solve a human problem/situation/ context
which may or may not involve reification of some or all of the steps as “technology”).
There is currently a great deal of misunderstanding about user-based where some believe that we need to understand the users per se (i.e., the so-called “individual differences” approaches) in order to fulfill our research agenda. However, we believe we need to focus on the users only within the situations/problems that work to both motivate and engage human collaborative and communicative behaviors and in some cases, only the situations/problems in which users are engaged.

“Problem” (Taylor, 1986; Nilan, 1992) or “situation” (Dervin, 1983; 2001; Dervin & Nilan, 1986) is the time/space context for human cognitive behavior. These are very broad terms, not to be confused with the much narrower “problem solving” notions from cognitive psychology, management, etc. In essence, the terms refer to a “chunk” of time/space about which people collaborate/communicate and ultimately the focus of system design – helping users share and create meaning to address their situations/solve their problems through access to resources (information/data; computing functionalities; links to others, e.g., experts).

“Language” is the means through which human beings create and exchange meaning. This is accomplished through a series of co-focusing, co-orienting, and collaborating behaviors (Kim, 2003) which serve to orient one person’s context to the other’s. Following the so-called “Prague Functionalists,” a unit of meaning has two necessary components in this orienting process: “Topic,” or what I am talking about and “Comment,” or how the topic at hand “fits” my context (i.e., problem/situation and any associated goals or envisioned end states) (Jakobson, 1963). Meaning is therefore, not exchanged per se but is converged upon over an iterated series of utterances over time. Language as we are defining the concept has nothing to do with the difference between Chinese Mandarin and American English. Rather, language is an extremely broad concept that encompasses all manner of expressing relationship, existence and movement and it is much more than merely a tool. Language is employed to orient other people, one to the other (whether in a disclosure sense or in a deceptive sense), orient other people to a specific context (time/space bound problem/situation, i.e., topic), and/or to specify individual experience with that context in terms of values, perceptions of situational conditions, goals or end states (i.e., comment).

“Information” is a resource which (we assume) helps the human(s) involved in addressing a problem/situation facilitate progress towards her/his/their desired goal or end state. [Note: “facilitate” implies constraint to perception of the environment and/or perception of movement possibilities and consequences. A resource that facilitates may not necessarily be empowering, it may also be inhibiting while a constraint may not necessarily be inhibiting, it may also help to facilitate “cognitive movement” (defined below)]. All information is bound by the context in which the collaborating occurs. For example, a textbook by an expert in Alzheimer’s disease may contain insight to help me deal with a friend with the disease but it is buried in a book which was structurally constrained to fit a 15-week educational program. Since the small bit of information that might help me is not part of an actual conversation between me and the author, it is extremely difficult for me to find – there are no co-focusing or co-orienting features in the text linking me, the reader, to the writer and scarce opportunity for this to ever occur. Even when we observe two people in conversation as they collaborate on one or the other’s situation/problem, there is much
that is not articulated (because it is already understood) that the outside observer has no access to which renders any technological recording of the interaction necessarily incomplete. Similarly, technological artifacts are necessarily incomplete expressions of context and, therefore, inadequate representations of the problem/situation from the perspective of either person involved. This in turn presents a difficulty when we seek to access and re-use the artifacts, especially when they are “located” in a huge “pile” of other inadequate representations. Note that we can posit a continuum of information artifacts, from an artifact addressing how to make a chocolate cake (for example) where there may be many possible contexts where a chocolate cake is appropriate, to an artifact addressing the nature of Alzheimer’s disease where the help needed by a patient is likely to be different than the help needed by a relative of the patient. In neither case is the user’s context likely to be present in the information artifact itself—albeit a seemingly more profound issue in the case of Alzheimer’s disease.

“Cognitive movement” is a central metaphor in Dervin’s (1983) Sense-Making which is employed to describe the human experience of being alive over time. In this metaphor, experiencing life is described as taking steps (mentally as well as perhaps physically) through problems/situations, sometimes concurrently (although not simultaneously) or serially. Cognitive movement invariably implies emotive steps. Cognitive movement is one of two central concepts in the user-based approach we put forth in this paper. It is inseparably tied to the concept of problem/situation.

“Uncertainty” (Carter, 1980) refers to the aspects of an individual’s (or individuals’) perceptions of a problem/situation that are not already pre-determined. Since change (in self, others, environment and problem/situation) is pervasive, uncertainty is always (except with reflexive and habitual behavior) an aspect of human perception. Dervin (1983) refers to a “gap” to represent the uncertainty inherent in an individual’s perception of her/his position relative to that individual’s movement through the situation/problem/context at hand. When uncertainty is perceived by the individual, s/he can attempt to resolve the uncertainty by sharing meaning or creating meaning through collaborating with others (either directly through conversation or indirectly through artifacts of past conversations).

From a monadic perspective, “meaning” describes the sense that an individual makes of aspects of the environment inherent in her perception of her problem/situation in terms of her understanding of the environment and/or her movement relative to that environment to reach her goal or end state. This meaning is based on past experience and certainly based on past and present conversations with others (either direct or vicarious). In this way, meaning can be seen as the creation of new “sense” (Dervin, 1983) about “how to bridge the gap” (i.e., addressing uncertainty), it can also be seen as the creative re-interpretation of old meaning to “fit” new situational conditions. Although meaning is created directly by experiencing a problem/situation, experience can also be vicarious – experienced indirectly through observing others. A dyadic (or larger) model of sense making can help to guide our efforts because the observing of others’ experiences and behaviors is realized through conversing with others about the specific context given specific “comments.” Such “comments” are rare in most formal artifacts but comprise the bulk of the verbiage in a conversation (see Yoon & Nilan, 1999). This has become even more evident in our digital,
post Web world. From birth, individuals are enmeshed in a collaborative network of others who attempt to help the individuals observe and move effectively through collaborative communicating. All communicating is through language grounded in individual experience (direct or vicarious) and meaning is created by the similarities and differences among individual experiences. Much meaning (some, i.e., structural views – e.g., Giddens (1991), Bordieu (1999) – would say “all” meaning) is perpetuated over time through pervasive structurational (e.g., historical, cultural) constraint and extended experience with a situation/problem (or group of related situations/problems). [Note: “communicating” does not necessarily result in the rare phenomenon of “communication” (Carter, 1980). So communicating only implies the attempt to share experience and orientation, not the result]. One point of the foregoing is that explicit comments in an artifact (which is much more likely in a conversation than a formal publishing or broadcasting artifact) allow a subsequent user to quickly determine whether the artifact will be of any use to him/her.

“Knowledge” refers to experience with a specific problem/situation or set of related problems/situations (D’Eredita and Barreto, 2006). We assume the following in regard to knowledge (D’Eredita and Barreto, 2006: 1824):

1. The nature of knowledge is episodic, thus personal, situation-/problem-specific and acquired through experience, i.e., there is no abstract or non-contextualized product “stored” somewhere in the brain.
2. Experience results from the construction and relating of episodes, but does not necessarily result in specifically “intended” knowledge.
3. The proliferation of experience by individuals within a social context (e.g., dyad, group, team, organization, community, etc.) is the result of constructive and collaborative communicating behaviors by which two or more individuals collectively focus attention, thus collectively construct relatable episodes—from the perspective of both the intra- and interpersonal.

Logan (1988) defines an episode as follows:

Processing episodes consist of the goal the subject was trying to attain, the stimuli encountered in pursuit of that goal, the interpretation given to the stimuli with respect to the goal, and the response made to the stimulus (Logan 1988: 495).

To paraphrase Logan’s quote in Dervin’s (1983) terms, making sense of a situation involves the goal or end state that the individual has in mind, the situational conditions as perceived and interpreted by the individual as s/he moves through the situation, and the cognitive behaviors (especially those that serve to collaborate and to communicate with others) that the individual takes to move towards his/her goal. This entire “chunk” of time and space (i.e., episode) is the context which is the central focus of user-based research put forth in this paper. That we do this by collaborating and communicating (via language) with others implies that the constructed “meaning” is tied to social cognitive behaviors among individuals.
This is very similar to sense-making from the perspective of Carl Weick (albeit more specific):

The process of sensemaking is intended to include the construction and bracketing of the text-like cues that are interpreted, as well as the revision of those interpretations based on action and its consequences. Sensemaking is about authoring as well as interpretation, creation as well as discovery (Weick 1995: 8).

Overlap among episodes allows for a stream of discrete episodes to result in a seemingly fluid flow of experience. We would not be able to make sense of our experiences if this was not true (Weick, 1995). For example, D'Eredita and Barreto (2006: 1829) suggest the following:

1. A new episode might be associated (individually and collectively) with previous episodes because of similar qualities as defined above. That there is some type of incongruity results in the most obvious need for sensemaking (Weick, 1995). It presents the need for constructing a potentially unique episode that is congruent enough for it to be associated with past episodes; or, for it to make sense. This is not an abstraction, but a direct comparison made through human-cognitive behaviors. Episodes are explicitly related or not explicitly related in some manner. In the latter case, previous episodes, however, most likely continue to indirectly influence behavior whether individuals are aware of this influence or not (Reder, 1996).

2. On the other hand, a new episode might reinforce a previous experience because of similar qualities. Here, one can assume a high probability that newly constructed episodes will be related to past episodes. Unlike the previous case, the amount of effort required to make sense of an episode is minimal, thus allowing for specific stimulus-response behavior to be optimally reinforced (Wyer, 1997).

3. A new episode might also fall between the two extremes. This is perhaps the gray area in which one is said to rely upon previous experience with similar episodes/situations/problems referenced by Nonaka and Takeuchi (1995) in their view of tacit knowledge. Here, one is simply afforded the chance to do less sensemaking than in the first case presented while also being able to leverage an array of previous episodes that are functionally (or not) similar in quality.

Note that Bordieu’s (1999) notion of “habitus” can help us understand scenarios two and three above. Habitus refers to familiarity with a particular situation/problem (through experience) such that the resources of the individual are more oriented towards the present uncertainty of situational conditions that are out of the ordinary (e.g., have changed since the last time the person has addressed the situation/problem). This is not to be confused with “habit” which is a reflexive behavior (non-reflective) (Cohen, 2007).

To juxtasupose all of the above with ideas presented by D'Eredita and Barreto (2006):

A robust cognitive and social cognitive set of behaviors emerges if we assume experience is episodic and is the construction of and relationship among episodes. This allows individuals to be practical and “reliable” (Weick & Roberts, 1993) in
regard to behavior … Episodes may be constructed given a specific problem, but not necessarily in a manner that makes them representative of an array of potential contingencies (D’Eredita and Barreto, 2006: 1829).

This leads us to assume the following in regard to episodes, ergo experience (see D’Eredita and Barreto, 2006, for a more complete discussion on these assumptions which are a juxtaposition of assumptions from a perspective representative of the field of cognitive psychology, particularly that of Logan (1988), with that of an i-field perspective):

1. The constructing and relating of experience is episodic: Each episode is associated with one or more previous episodes, but is constructed as a separate co-occurrence.
2. Constructing new episodes is obligatory upon attention: That which is attended to is automatically perceived and embedded within the context of a given episode.
3. Relating to previous episodes is obligatory upon attention: Previous experience directly impacts behavior if a current situational condition is attended to and is associated with previous episodes in some way.

“Memory” refers to the ability of human beings to associate present situational conditions with perceptions of past situational conditions relative to the current episode. The associating is not exact, so we see limitations in the objectiveness of human memory and we certainly should consider the individual’s criteria employed for associating as inexact. The extent to which the associating is based on “habitus” or inherited criteria and logic represents increased likelihood that associations made for evolving uncertainty in situational conditions in the present and future will not be up to the task. It is important to note that while our perspective is cognitively slanted, our notion of episode (given its relationship to problem/situation) applies to context and both individual and social behavior. It is at this point in which we—if we have yet to do so—radically diverge from traditional cognitive theory.

We further diverge by suggesting that any notion of “storage” in relation to “memory” is misleading. Our epistemological stance places the individual in the present and notions of “past” and “future”—thus time—as cognitive constructs that facilitate sense-making from a functional perspective. Simply put, we are not comfortable assuming the world is as it “seems” to be, but rather how the world seems to be is functionally similar to “how it is.” We assume that the nexus of the cognitive behaviors described above is that of a neurological functioning organ—the brain. The physical foundation from which more abstract cognizing emerges is assumed to be in a constant state of change as it interacts with the world. It is because of this that we see no need to accept notions of “memory” like that adopted from a (computer-based) information-processing perspective. While we assume experience is “bounded” in the episodic manner discussed above and that each episode is processed as separate co-occurrence, we do not assume that these episodes are “stored” in this manner waiting to be “retrieved” or “recalled” at a latter time. We view behavior as resulting from cognitive behaviors that have been shaped by previous experience and as a response to a given problem given its (and an individual’s and/or group’s) state at a specific point in time and space.

Further, we do not assume behavior to be deterministic, albeit potentially implied given what has been said thus far. We view behavior as being tied to experience in a
probabilistic manner and to current constraints imposed by one’s interpretation of the problem (which is also relatively uncertain and probabilistic in nature). More experience implies that the individual or group has a better chance of usefully, or functionally choosing, or creating steps that facilitate individual or group progress towards the desired goal or end state. “Expert,” as its etymological roots imply, refers to one who has experience. Culturally we have cast experts as the ones who can most effectively and efficiently respond to a specific problem by choosing or creating appropriate steps. However, experience is based on past uncertainty rather than present or future uncertainty. This past orientation may potentially limit the expert in dealing effectively and efficiently with emerging new situational conditions.

“Creativity” refers to an individual perceiving or taking steps that are beyond his/her existing (direct or vicariously “inherited”) experience with the problem/situation at hand. As such, it is different from a judgment made externally, e.g., a “creative” work. Given the necessary association with the problem/situation at hand, we view creativity as being best conceptualized as a time/space bound cognitive behavior rather than a personality-level characteristic of the individual. The issue for researchers and managers thus changes from identifying “creative individuals” to identifying creative perceiving or step taking given the current collective experience available (e.g., Weisberg, 1993).

“Community” refers to the (direct and vicarious) communicating among individuals engaging with or involved in addressing uncertainty in one or more problems/situations. Humans are social creatures whose development begins (usually) in “families” and is subsequently nurtured in extra-familial sub-communities (e.g., schools, religious activities, etc.) which serve to broaden the individual human’s perspectives from an existential self-centeredness towards (the inclusion at least) a more social- or network-centric focus. Community is defined by the range of situations/problems with which the collective is engaged. “Organization” differentiates itself from a more emerging community in that it has already organized—albeit in some cases continuously adapting in order—to address a distinctive set of problems. In this sense, the more formal structure of an organization becomes more of a constraint (as discussed above) when compared to the more informal structure of a community. This is not meant to imply that community or organization are simply less or more developed forms of the same social entity. However, we do mean to imply some overlap in that they are a direct—albeit not exclusive—result of fundamental collaborative behaviors yoked by a set of common problems.

Below, we discuss how our agenda has and continues to unfold over time and how it relates back to the i-field-specific themes discussed at the beginning of the paper.

A Research Agenda Characteristic of the i-field

Constraints are logically tied to the problem/situation at hand and the more micro situational conditions that serve to contextualize the communicating behaviors which includes any potential IT (D’Eredita & Nilan, 2007). If we as researchers move from an individual-as-unit perspective to something that includes a more time/space bound problem-as-unit as well as the embedded, and even more micro, cognitive step-as-unit perspective, we might make some headway in understanding and managing the changes
that impact our field’s objective of providing access to resources. {Note: there is an even more micro unit of analysis common in the Sense-Making research of Dervin and her colleagues (e.g., Dervin, 2003) which is the “gap” which facilitates inquiry into very specific information and resource use, resource evaluation, etc. A “gap” is usually operationalized as questions that a respondent has in her/his mind at a particular cognitive step. A separate unit of analysis is needed for this fine-grain issue because multiple gaps are possible at any specific step}.  

As a field, we seek to create or discover patterns that serve to guide our organization of resources which in turn, must guide information seekers in locating resources for subsequent re-use. We argue that patterns which are derived from the technological artifacts as we find them are ineffective in facilitating either appropriate levels of agreement in classification of artifacts or retrieval by users (who we know won’t “read the manual”). The technology that produces the artifacts provides no insight into the logic of this organizing/retrieving endeavor whatsoever, it is a human behavior that ultimately dictates the function of any organizational scheme. Therefore, to the extent to which we can find patterns (i.e., similar actions and sequences of actions, rationales, values, descriptions, behaviors, etc.) in the way people collaborate and communicate about their problems/situations, we can examine these patterns to see if they can be employed effectively for the organizing and subsequent retrieval of artifacts. There is some evidence that indeed, they can be so employed (e.g., Nilan, 1992; Yoon & Nilan, 1999; Nilan & Mundkur, 2007). We argue that these same patterns may be suitable for organizing non-traditional resources that our current approaches to the organizing/retrieval dilemma do not accommodate (e.g., maps, images, people, places, etc.). After all, these patterns represent the universal “habitus” of human survival through collaborating and communicating which is far older than the mere 4,000 years since the invention of writing. And the patterns (e.g., between “topic” and “comment” or between one step and the next step) represent associations readily interpretable to users. 

Further, we believe that our functional understanding of these patterns will serve to inform our disciplinary design of systems and technology so that we can facilitate the organizing and retrieving of artifacts as those artifacts are generated. Note that constraints associated with design should be viewed as necessarily balanced between enabling natural—and potentially idiosyncratic—human behavior and guidelines for effective creation and exchange of meaning through “information.” For example, e-mail currently has only “To,” “From” and “Subject” fields. As Yoon & Nilan (1999) suggested, these might be augmented with “comment” fields such as ‘how the email will help the recipient understand his/her problem better’ and or ‘how the email will help the recipient figure out what to do at this time’ and/or ‘why this email is important to the recipient.’ The focus in this example is on “comment” and therefore the functional associations between users’ views of reality and their movement through that reality. This kind of association – between “topic” and “comment” – represents one fairly concrete association (of potentially many possible) that might enable our field to actually guide the generation of artifacts that incorporate Bush’s “associative indexing” as the artifacts are generated. We believe that in this way our discipline could lead insightful changes to relatively ubiquitous technologies that would serve subsequent organizing and retrieving. Again, this relatively
small change would be based on insight into the fundamental collaborating behaviors discussed above and not the technology per se.

Turning an Agenda into Action

While we emphasize creation, use and re-use of experiences above, here we will focus on only the latter two, but with the assumption that all that is discussed below is directly applicable to the design of systems specifically focused on the creating of information. Two courses of action are suggested in regard to use and re-use by the foregoing: The first is to generate rich descriptions of the community-based communicating behaviors and subsequent cognitive behaviors (i.e., perceptions and step taking) of the individual community members to search for patterns. The second is, based on these rich descriptions, apply our field-specific experience/habitus proactively to facilitate the direct communicating behaviors and at the same time, facilitate the effective and efficient use (and re-use) of vicarious experience. Since systems (including classification/organization of artifacts) have been defined above as “a series of steps designed to solve a human problem,” empirically derived patterns will inform us as to the selection of appropriate steps and sequences of steps. We see these patterns as superlative examples of associative dimensions alluded to by Bush (1945).

Based on this change in focus, the following user-based and problem/situation-based research agenda is proposed for the study of collaborative behaviors within communities, but with the assumption that a similar approach can be applied to, for example, teams:

First we would seek to describe behaviors within the collaborative communities that punctuate human lives (intra-community). Rich descriptions of the communicating and collaborating behaviors (not merely perusal of existing technological artifacts which are, by definition, meaning-challenged in-and-of-themselves) and their rationales (i.e., both topic and comment) can be examined for evidence of patterns in: (1) effective and/or efficient behaviors (steps); (2) sets of behaviors, e.g., roles (but NOT as characteristics of individuals) as functional sequences; and (3) reward structures and constraints that facilitate communicating and therefore, collaborating. Part of our disciplinary confusion vis-à-vis these behaviors are like a “fish in water” scenario – we are embedded in social interaction and therefore find it quite difficult to posit the behaviors as an object of inquiry. We believe it to be an imperative initial focus of inquiry. The flexibility of notion of “community” is particularly useful here because it would allow researchers to tailor their observations to groups with limited ranges of problems/situations (e.g., specific organizations or organizations focused on providing similar products or services). This in turn would allow us to pursue a basic research agenda into our primary phenomena and provide concrete practical insight into the targeted communities. As we pursue our rich descriptions, “community” as a unit of analysis will facilitate many analyses across different communities to get at the essence of human communicating and collaborating as well as experiment with various artifact creation possibilities.

We can subsequently examine similar phenomena in the communicating among communities. Of particular interest here is referrals from one community discussion to
another – when, under what conditions, etc. given the “horizontal” communication engendered by the Web. We believe that insight into this specific subset collaborative behaviors will be particularly useful for many information seeking scenarios in the digital age.

Once we have adequately described these phenomena and looked for relationships among behaviors and various use criteria, our collective understanding of the human perquisites inherent in creating, using and re-using others’ experiences we can then become proactively engaged in research and design of the actual production of artifacts which incorporate these efficiencies to facilitate appropriate vicarious re-use of the documented experience (e.g., adding fields to email/voicemail/texting interfaces). This will, in turn, facilitate subsequent re-use of the technological artifacts in more of a conversational manner as opposed to the current topical “keyword” strategy. We believe this kind of search interface (e.g., specify “topic” and then specify “comments” [plural employed here is deliberate]) will be more natural for the large majority of users – with no manual or knowledge of Boolean logic necessary. In essence, this is what Yoon & Nilan (1999) suggested - the organization of resources (both communicative and artifactual) within and between problem/situation-based communities. Over the (currently unimaginably huge) hypertext data store of artifacts that tomorrow’s Web will contain, we believe that this communicative/collaborative framework will facilitate the sharing of resources within and among communities, and ultimately, facilitate the effective/efficient access of individuals to the communities which best “fit” their individual problems/situations.

Whether or not you subscribe to Bush’s (1945) “memex” vision, the potential power of his “associational indexing” to manage inherently unmanageably huge data set seems logically possible if we posit the associating as an extension of how human beings help each other make sense of and move through the sequence of situations/problems that punctuate their experiences. Our position is that “meaning” is a product of human beings actively experiencing the world as they “move” through time and space. As inherently social creatures, we attempt to share meaning linguistically (broadly cast) and generate artifacts through various technologies either as part of our communicating/collaborating with others or as an attempt to share meaning with another in the future who is in a similar situation or has a similar problem. The artifacts are what we call information. We believe that a useful way (if not the most useful way) to organize large numbers of such artifacts lies in the association between the active human being, his/her problem/situation and goal or envisioned end state and a co-collaborator (either in the present or in an envisioned future).

In Conclusion

The Internet, and more specifically the Web, has changed the functional definition of community by illustrating the collapse of the geographical/spatial constraint on communicating. Community implies an organizing principle more intimately tied to the problem/situation than to a person (or a set of people) per se, which has resulted in a multitude of virtual communities that are more narrowly focused on the range of problems/situations that define them. Along the way, the Web has also spawned a multitude of types of artifacts (what our field calls “information”) that come in a seemingly
increasing number of unpredictable forms. Our inherited logic (so far at least) seemingly lacks the necessary coherency for the managing of these artifacts.

Another way to describe the Internet and its multi-media offspring, the Web, is the removal of many hierarchical or top-down constraints, both in terms of the “means of production” (à la Marx) and in terms of centralized organizational/political control (the Web would seem to be inherently un-manageable). This has resulted in an immense and rapid increase in the total volume of various types of artifacts. This will continue as various means by which people collaborate freely develop and evolve. This makes accurately predicting new ways of collaborating and what is created in terms of resultant artifacts very difficult (we would argue, impossible). However, the constant of fundamental human behaviors will remain. They will be manifested in different technological ways, yet potentially be more exposed than ever before. The i-field is seemingly the only community seeking profound insight into these behaviors through the lens that technology offers—albeit not formally so. We argue in this paper that anchoring ourselves in a constantly shifting bed of technology and artifacts will not lead to stability or necessarily profound insight into either of these, yet the proliferation of ways to communicate and resultant artifacts continues. This is why we believe a more focused and solidified agenda for the i-field based on fundamental human behaviors is not only timely, but—most importantly—necessary.

References


Carter, R. F. (1980). Discontinuity and communication, paper presented at the East-West Institute on communication theory from Eastern and Western perspectives, Honolulu, HI.


