

# Narratives in Collaborative Information Seeking

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## ABSTRACT

In the recent few years, there is a burgeoning interest surrounding the research area of Collaborative Information Seeking (CIS). Researchers have argued that CIS goes beyond simple “question and answers” sessions between two (or, more) people. Despite an increasing number of conceptual as well as technical studies related to CIS, few fundamental questions still remain unanswered - if CIS is not just about “Question & Answers”, what does it exactly constitute? What are the underlying mechanisms and practices that underscore CIS-related activities? We propose that one way to answer these questions is to conceptualize CIS as being constituted through “narratives”. In this position paper, we elaborate upon the notion of “narratives”, and talk about how such a conceptualization could be of potential help to resolve some of the unanswered puzzles concerning CIS.

## Keywords

Collaborative Information Seeking, Narratives, Temporality, Routines

## 1. INTRODUCTION

In the past, researchers have tried to demarcate between the concepts of Individual Information Seeking (IIS) from Collaborative Information Seeking (CIS) [6, 14, 19]. In doing so, they have argued that CIS is *not* just about two (or more) people posing questions and answers to each other in their attempt to look for a specific information [14]. They have argued that CIS is much more complex, and goes beyond simple question and answers[5, 19].

Thereby, if CIS is not just about “Q&A”, what does it exactly constitute? What are the underlying mechanisms and practices that underscore CIS-related activities? Answers to these questions are not yet sufficiently addressed. We propose that one way to understand this is to think of CIS as constituted through “narratives”. Unlike Individual Information Seeking, Collaborative Information Seeking is orchestrated over “narratives”. Narratives become the underlying platform through which CIS takes place. Understanding how these narratives are created, shared and put to use in ‘real time’ would not only let us uncover the fundamental mechanisms that underlie CIS, but also

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Conference '10, Month 1–2, 2010, City, State, Country.

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would give us design insights about devising systems and practices that could potentially capture, categorize and retain these narratives as a part of the larger organizational memory.

This position paper is organized as follows. In the next section, we provide a brief review of the research done on CIS, and identify some of unanswered questions. In the subsequent sections, we talk about how “narratives” could be used – both as a theoretical lens as well as the underlying research phenomena – to answer some of those puzzles about CIS. Later, we raise few questions to the workshop participants to brainstorm about different ways and means to collect and analyze narratives from the field. Finally, we conclude with the potential contributions that “narrative” related research could make to better understand CIS.

## 2. COLLABORATIVE INFORMATION SEEKING – WHAT WE KNOW AND WHAT WE DON’T KNOW SO FAR

Wilson [21] viewed *Information seeking* as the purposive seeking for information which arises as a consequence of some *need* to satisfy a goal. It is also termed as *strategic maneuvering*, and is conceptualized as a macro-level activity, as opposed to the micro-level activities of *searching* and *retrieval* (also called tactical maneuvering [14]). Many of the subsequent models on information-seeking were developed based on these initial ideas.

However, most of them conceptualized information seeking as an individual activity. For example, Wilson [21] stated that Information Seeking behavior occurs as a consequence of the recognition of some need perceived by the user (p.4). In the above statement, we could see Wilson conceptualizing Information Seeking as an intrinsically individual activity, which gets triggered when the individual user recognizes some information need. Reddy and Jansen [14] states two major reasons for the dominance of Information Behavior models which are centered around individuals –

- i) A bias towards traditional interaction patterns between a single user and technology;
- ii) Organizational work is viewed as a set (or series) of individual activities. Lesser emphasis placed on collaborative work

As a reaction to those individual-centered approaches which conceptualized information seeking as an intrinsically individual activity, researchers stressed on the collaborative aspects of information seeking [5, 12, 15, 19]giving forth to the research area of Collaborative Information Seeking (CIS). Ever since, there is a burgeoning interest surrounding this research area, reflected in the increasing number of research studies published

in conferences and journals, workshops hosted, and dedicated journal special issues.

For the purpose of this paper, we define CIS as the *purposive seeking of information by two or more individuals because of an information need in order to satisfy a shared goal*. CIS may involve the use of a variety of systems, people, and channels in order to address the information need.

Researchers sought to understand CIS in different contexts. Gorman [5] looked at how team members in an intensive care unit worked together to seek and share the needed information. One of the key findings from their study suggested the importance of binding different sources of information together, in order to address a specific request/question from a team member. Sonnenwald et al [19] conducted a study in a hierarchical work environment (military command & control). Their findings suggested that Information Seeking is a dynamic activity, which involved working together to “seek, synthesize and disseminate information” (p.462). They located CIS within the wider context of *group communication* and emphasized the importance of interwoven situational awareness (i.e. individuals, intra-groups and inter-groups having a shared understanding of the situation) and

Reddy and Dourish [16] conducted a study in the medical domain, where they described the role *work rhythms* plays during the collaborative information seeking practices of team members. Hyldegård [7] looked at CIS practices within a group-based education setting in order to explore whether the existing *Information Search Process model* [9] holds good for group work, and to find out whether group member’s behavior deviated significantly from the individual’s modeled using the *ISP model*. She found that the ISP model is insufficient to explain collaborative group work. There were many contextual and social factors, as well as the cognitive and emotional experiences, that affected the group members’ activities. Cognitive experiences of the individuals were affected not only from seeking a closure in information seeking activities, but also from the *work task* themselves and from the *intra-group experiences*. She concluded that groups cannot be modeled as “an individual, just in another sense”[7].

Finally, Reddy and Jansen’s [14] empirical study of two healthcare teams have provided important initial insights about Collaborative Information Seeking. They identified seven categories of team information needs, and observed that there

was a large percentage of *organizational-related information* sought by team members, in addition to the majority *medical-related information*. More importantly, they identified four triggers (*information fragmentation, lack of immediately accessible information and complexity of information needs*) that act as transition points from individual to collaborative information seeking.

Researchers have also developed many technologies that could support CIS activities. [4, 8, 18] Krishnappa [8] developed a CIS prototype called MUSE (Multi-User Search Engine), which placed an emphasis on the role of synchronous communicative functionalities, like the chat function, during information seeking and retrieval processes. She found that such functionalities enhance the information seeking and retrieval processes within teams. In the recent past, researchers have developed advanced tools, such as like Cerchiamo [4] and Coagmento[18] facilitating algorithmically-mediated Collaborative information seeking and searching.

Despite these burgeoning number of studies, a fundamental question concerning CIS is still not yet sufficiently addressed - *if CIS is not just about “Question & Answers”, what does it exactly constitute? What are the underlying mechanisms and practices that underscore CIS-related activities?*

### 3. NARRATIVES IN COLLABORATIVE INFORMATION SEEKING

We propose that one way to uncover this puzzle is to think of CIS as constituted through “narratives”.

#### 3.1 What are Narratives?

Narratives could be thought of as “...*“thick descriptions” that provide a holistic account of a set of events and contain a mixture of beliefs, intentions, actions, and contextual details that are temporally ordered, and have an implied “plot” that connects them in terms of causality*” (p.327) [1]. In simple terms, “narratives” are “*set of events and the contextual details surrounding their occurrence*”(p.108) [2] that is meaningfully synthesized by a plot. This *plot* temporally orders this set of interrelated incidents, and places them within a socio-historic context.

For example, consider the following vignette from Paul & Reddy [11]

#### Vignette

**1:40pm: Registration associate RA2 tells me that she feels sorry for the patient in room 20 who is 8-weeks pregnant and was hit by a car. The next shift’s charge nurse, CN3, arrives and the current charge nurse, CN2, tells CN3 information about each patient by going through FirstNet.**

**CN2 tells CN3 that the patient in room 20 was hit by a car and is 8 months pregnant. CN2 remembers the case of a former patient who was 7 months pregnant when brought to the ED and the baby had been lost because no one realized that the patient was pregnant.**

**5:00pm: CN3 is talking to the attending AP about her patients. She specifically tells AP that she is worried that the patient in room 20 who is 8 months pregnant.**

**AP (surprised): “How pregnant?”**

CN3: “8 months. I’ve been told baby is ok.”

AP is still concerned so he and CN3 pull up the patient’s record in FirstNet and discuss various aspects of her case. They don’t verify the pregnancy information. They miss that the record says 8-weeks pregnant. They discuss how the patient should be treated given the advanced stage of pregnancy.

This vignette illustrates acts of sensemaking during collaborative information seeking. We could see that when a charge nurse “remembers the case of a former patient who was 7 months pregnant when brought to the ED and the baby had been lost because no one realized that the patient was pregnant”, she is not just simply providing an answer. She is evoking memories of the past, and re-contextualizing it to apply to the “task in hand”. And she does this through weaving a plot. These plots capture the micro-moves that happen as people *work the context* to “get things done” and “seek the needed information”. Also, through this plot, temporality is structured. Past, present, and future are re-ordered to cater to the “task in hand” i.e. attention in the present is shaped by evoking memories of the past and expectations of the future [17]. Through using a plot, narratives offers a specific “point of view” of an actor towards handling a situation [1]. These fine-grained descriptions could be potentially very useful for the “person on the spot” towards addressing the information needs of a specific situation.

Similarly, we could think of instance in other domains within CIS (such as, social search) where narratives play a central role. For example, when we post a question to our friend’s network concerning “What DSLR camera should we buy?”, what we get back most of the times is a narrative about DSLR cameras – *why did I buy this camera? When did I buy it? How am I finding it now? Some sample photos I took using that camera. And so on.* In fact, one could even argue that the very power of “social media” is because it offers ways and means invoke and share such narratives.

### 3.2 Research Questions

Most social information in our everyday life is transmitted in the form of narratives. Most of our organizational realities too, are transmitted in the form of narratives[20]. Research within Cognitive Science tells us that information in memory tends to be stored and retrieved in the form of narratives, and people have a predisposition to share and use information in the form of narratives [3]. Within the context of CIS, below are some of the research questions -

1. What role do narratives play during Collaborative Information Seeking activities?
2. How do narratives help actors in structuring their organizational reality?
  - a. How do narratives structure “temporality” within organizations? (i.e. how do narratives help actors to evoke past memories, attend to present experiences, and anticipate future needs)
  - b. How do narratives aid actors in reconfiguring their everyday work activities (i.e. how does it help actors in balancing between the “routinized” and non-routinized” aspects of work in order to “get things done”)

3. What possible design recommendations could one arrive from the gained descriptive insights?
  - c. How could these “micro-narratives” be captured, stored and retrieved?

## 4. DISCUSSION

Narratives empower organizational actors with powerful means for making sense of everyday work contexts [20]. In addition to that, they provide a way for people to share contextual information with one another[10], and create common ground to facilitate this sharing. Thereby, narratives play a dual-function – in simultaneously being a device for ‘sensemaking’, and in being a vehicle for ‘generating action’.

However, in spite of these evidences, very few mechanisms are there in place to store, retrieve, and incorporate these narratives as a part and parcel of everyday work activities. As things stand now, organizations tend to lose these powerful narratives as soon as a particular person quits the organization. In addition to that, the information technologies that are in place within organizations are unable to capture these narratives. Most of these systems are built based on a traditional “sequential, request/response mode of information processing” [13] as opposed to a “narrative mode of information processing”.

Thereby, the research challenge is in understanding the role played by narratives in everyday organizing activities, specifically within the context of collaborative information seeking. From the insights gained, one could devise some recommendations for designing information systems based on “narrative information processing”.

Also, observing and capturing “narratives” in the field is difficult. Narratives are evoked by actors when they go about doing their tasks. Capturing those narratives could be slightly tricky. From a “data analysis” standpoint, narratives could be thought of as a “theoretical lens” to understand a phenomena (in our case, CIS), but also could be thought of as the “underlying research phenomena” itself. We throw open these questions for the workshop participants –

1. What are the different ways to capture “narratives” on the field?
2. What marks the boundaries of a “narrative”? In other words, what is not a “narrative”?
3. How could these “narratives” be best used as theoretical lens to illuminate CIS better?

## 5. CONCLUSION

In this paper, we talked about few fundamental questions about CIS that are still unanswered. We talked about how “narratives” could be used – both as a theoretical lens as well as the underlying research phenomena – to answer some of those puzzles about CIS. We talked about why “narratives” are powerful social vehicles for “making sense” of a situation as

well as for “generating action”. We highlighted that organizations tend to lose these powerful narratives as soon as a particular person quits the organization, and talked about the need to capture those narratives. We raised few questions to the workshop participants to brainstorm about different ways and means to collect and analyze narratives from the field. We believe that research on “narratives” would not only illuminate some of the answered questions about CIS, but also would help us uncover some of the fundamental aspects and uses of “narratives themselves. We look forward to participating in the workshop discussions.

## 6. REFERENCES

1. Bartel, C. and Garud, R. Narrative knowledge in action: Adaptive abduction as a mechanism for knowledge creation and exchange in organizations. *The Blackwell Handbook of Organizational Learning and Knowledge Management*. 2003, Oxford: Blackwell Publishing, 324 - 342.
2. Bartel, C. and Garud, R. The role of narratives in sustaining organizational innovation. *Organization Science*, 2009. 20 (1). 107-117.
3. Fiske, S.T. and Taylor, S.E. *Social cognition*. Addison-Wesley Pub. Co., Reading, Mass., 1984.
4. Golovchinsky, G., Adcock, J., Pickens, J., Qvarfordt, P. and Back, M., Cerchiamo: A Collaborative exploratory search tool. Proceedings of the 2008 conference on Computer Supported Cooperative Work (CSCW' 08), San Diego, CA, USA.
5. Gorman, P., Ash, J., Lavelle, M., Lyman, J., Delcambre, L., Maier, D., Weaver, M. and Bowers, S. Bundles in the Wild: Managing Information to Solve Problems and Maintain Situation Awareness. *Library Trends*, 2000. 49 (2). 266-289.
6. Hyldegård, J. Beyond the search process - Exploring group members' information behavior in context. *Information Processing & Management*, 2009. 45 (1). 142-158.
7. Hyldegård, J. Collaborative information behaviour—exploring Kuhlthau's Information Search Process model in a group-based educational setting. *Information Processing & Management*, 2006. 42 (1). 276-298.
8. Krishnappa, R. Multi-User Search Engine (MUSE): Supporting Collaborative Information Seeking and Retrieval *Information Sciences and Technology*, University of Missouri, Rolla, Missouri, USA, 2005, 76.
9. Kuhlthau, C. Inside the search process: Information seeking from the user's perspective. *Journal of the American Society for Information Science*, 1991, 42 (5). 361-371.
10. Orr, J.E. *Talking about Machines: An Ethnography of a Modern Job*. Cornell University Press, Ithaca, NY, 1996.
11. Paul, S. and Reddy, M., Understanding together: sensemaking in collaborative information seeking. in, (2010), ACM, 321-330.
12. Poltrock, S., Grudin, J., Dumais, S., Fidel, R., Bruce, H. and Pejtersen, A., Information seeking and sharing in design teams. in, (2003), ACM New York, NY, USA, 239-247.
13. Reddy, M. and Dourish, P., A Finger on the Pulse: Temporal Rhythms and Information Seeking in Medical Care. in *In Proc. of ACM Conf. on Computer Supported Cooperative Work (CSCW'02)*, (New Orleans, LA, 2002), 344-353.
14. Reddy, M. and Jansen, J. A Model for Understanding Collaborative Information Behavior in Context: A Study of Two Healthcare Teams. *Information Processing and Management*, 2008, 44 (1). 256-273.
15. Reddy, M. and Spence, P.R. Collaborative Information Seeking: A field study of a multidisciplinary patient care team *Information Processing and Management*, 2008, 44 (1). 242-255.
16. Reddy, M.C. and Dourish, P., A finger on the pulse: temporal rhythms and information seeking in medical work. in *Proceedings of the 2002 ACM conference on Computer supported cooperative work*, (New Orleans, Louisiana, USA, 2002), ACM, 344-353.
17. Ricoeur, P. *Time and narrative*. University Of Chicago Press, 1990.
18. Shah, C. Coagmento - A Collaborative Information Seeking, Synthesis, and Sense-making Framework *CSCW'10*, Savannah, GA, 2010.
19. Sonnenwald, D.H. and Pierce, L.G. Information behavior in dynamic group work contexts: interwoven situational awareness, dense social networks and contested collaboration in command and control. *Information Processing & Management*, 2000, 36. 461-479.
20. Weick, K.E. *Sensemaking in Organizations*. Sage, Thousands Oaks, CA, 1995.
21. Wilson, T. On user studies and information needs. *Journal of Documentation*, 1981, 37 (1). 3-15.