

## **The Importance of Socio-Emotional Considerations in Online Communities, Social Informatics, and Information Science**

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### Abstract

Alongside cognitive and social phenomena, many scholars have examined emotional and affective considerations in information science, but a potential emotional or affective paradigm has not coalesced to the extent of the social or cognitive paradigms. We argue information science research should integrate the social paradigm, as offered by social informatics, with affective and emotional considerations: a *socio-emotional* paradigm. A review of existing literature and findings from users' motivations to participate on the Academia section of the Stack Exchange social questioning-and-answering site make our case. We uncovered tensions between the intended information-centric focus of the community and users who believed social, emotional, and affective considerations needed to be foregrounded, speaking to online communities acting as boundary objects, with the "fit" for one user or community not always the same as for another. An integrated socio-emotional paradigm shows much strength for social informatics and information science research, including uncovering hidden concerns and differences in values, as in our study. Affective and emotional research, often bubbling under in information science, should rise to the surface in not so much a paradigm shift but an integration of social, emotional, and affective considerations into a socio-emotional paradigm.

### Introduction

Paradigms in information science research, drawing on Kuhn (1970), are traced through an initial system-oriented paradigm to a user- and cognition-centred paradigm shift in the late 1970s and 1980s (Dervin & Nilan, 1986; Ellis, 1992; Raber, 2003). Claims to further paradigms and paradigm shifts in information science research have included ecological (e.g. Nardi & O'Day, 2000), social (e.g. Kling, 2007; Raber, 2003, pp. 201-224; Sawyer & Jarrahi, 2014), affective or emotional (e.g. Lopatovska & Arapakis, 2011; Nahl & Bilal, 2007), critical or social justice-oriented (e.g. Eubanks, 2011; Leckie & Buschman, 2009), and data science-driven (e.g. Song & Zhu, 2017). In response others have argued these shifts are not the creation of new paradigms in the Kuhnian (1970) sense, but instead the addition of new perspectives, approaches, metatheories, or “turns” augmenting the systems and cognitive paradigms at “a lower order than paradigm shifts” (Hartel, 2019, Introduction section, para. 3). Scholars have further debated the nature and even the validity of Kuhnian research paradigms altogether when applied to information science. Bates (1999) argued information science requires a multiplicity of approaches both “above” and “below the water line” (pp. 1043-1044), while Budd and Hill (2007) believed Kuhnian paradigms may “distort the puzzle” under study (p. 3) and a “received” Kuhnian notion of paradigm shifts does not reflect the true diversity and continuum of approaches in information science (p. 8), calling for the field to “forget about paradigms, since they are illusions” (p. 10).

What remains evident is that there are these different schools of thought on what information science research should be. We do not intend here to resolve debate on whether these schools are “paradigms”—we choose to use that label for consistency within this special journal issue—or whether other labels are more appropriate. Nonetheless, these schools have shaped the historical and ongoing research and discourse of information science, with the cognitive paradigm well-accepted and quite dominant within the field. The social paradigm has become popular over the past 25 years with the rise of research in social informatics, sociotechnical systems, and cognate areas (Sanfilippo & Fichman, 2014), and its importance is now accepted by many. Users often frequent online community, social media, and technology mediated spaces to share, exchange, use, and create information and knowledge (Haythornthwaite, 2007; Tufekci, 2013; Wellman & Gulia, 1999), and ignoring the social

paradigm and social construction would leave us unable to fully understand this (Kling, 2007; Kling, Rosenbaum, & Sawyer, 2005; Sawyer & Jarrahi, 2014).

However, cognitive and social phenomena and paradigms are not the sole considerations at play in online communities, social media, and information science. Alongside the rise of the social paradigm many scholars began to examine emotional and affective considerations in information science (Kuhlthau, 1991, 2004; Lopatovska & Arapakis, 2011; Nahl & Bilal, 2007), but a potential emotional or affective paradigm did not coalesce to the extent of the social or cognitive paradigms. This is despite the importance of emotion and affect alongside social informatics; many online communities may be information-centric, with information seeking and sharing playing a central role and purpose for users (Worrall, 2019), but information is not the sole factor guiding discussions, participation, and sharing. In engaging in many online communities users express a range of emotions, with social and emotional support (Caplan, 1974; Cohen & Syme, 1985) important and significant in motivating continued use of such spaces for socialization and information resources (e.g. Ardichvili, 2008; Frost & Massagli, 2008; Kazmer & Haythornthwaite, 2001; McLure Wasko & Faraj, 2000, 2005; Oh & Syn, 2015; Worrall & Oh, 2013).

In this paper we argue for an approach to information science research that integrates a social paradigm, as offered by social informatics, with affective and emotional considerations, resulting in a *socio-emotional* paradigm integrating these facets. In addition to existing research literature, we draw on findings of a case study of the Academia section of the Stack Exchange social questioning-and-answering (social Q&A) site. We argue not so much for a Kuhnian paradigm *shift* as a paradigm *integration*, an approach in agreement with Bates (1999) and Hartel's (2019) calls for multiple integrated "turns" and perspectives, and advocate for increased integration of social and emotional approaches as part of research into online communities, in social informatics, and in information science.

## Background

### Social Paradigm

The social paradigm in information science, as informed by the rise of research in social informatics, sociotechnical systems, and cognate areas over the past 25 years (Sanfilippo & Fichman, 2014; Sawyer & Jarrahi, 2014), seeks to explain the connections and interactions between the social (groups, communities, organizations, and society) and the technical

(information and communication technologies and systems), and the roles and relationships of information and communication technologies in social settings (Kling, 2007; Meyer, 2014). The social paradigm can thus help us study how users frequent online community, social media, and technology mediated spaces to share, exchange, use, and create information and knowledge (Haythornthwaite, 2007; Tufekci, 2013; Wellman & Gulia, 1999) in a socially constructed and socio-technical context (Kling, 2007; Kling, Rosenbaum, & Sawyer, 2005; Sawyer & Jarrahi, 2014).

Literature adopting a social paradigm tells us people form online communities by coming together online, interacting, and communicating with each other, as part of an aggregated virtual space which can facilitate the formation of social ties, and with the mediation and support of information and communication technologies (Ellis, Oldridge, & Vasconcelos, 2004; Faraj, Jarvenpaa, & Majchrzak, 2011; Resnick & Kraut, 2012; Rheingold, 2000; Rosenbaum & Shachaf, 2010). Many such online communities are *information-centric*, emphasizing information and knowledge creation, sharing, and use as a primary activity (Worrall, 2019); other online communities may consider this a by-product of social interaction (Fisher, Durrance, & Hinton, 2004) or emphasize social ties, gameplay, or role-play (cf. Faraj et al., 2011). Despite the intended emphasis of designers, leaders, or moderators, individual users or subgroups may find a different purpose or have the online community play a different role for them. Coherence (Star & Griesemer, 1989) of its norms, values, and behaviours may be enforced, but too much coherence or groupthink (see e.g. Tsikerdekis, 2013) can cause conflicts within an online community when new users enter or other communities come into contact with it, making it an unsuccessful boundary object (e.g. Albrechtslund, 2017; Star & Ruhleder, 1996).

### **Emotional and Affective Paradigm**

Emotions, empathy, and affect have also been at least a small part of information science research for many years, with Nahl (in Nahl & Bilal, 2007) and Hartel (2019) tracing their origins as far back as 1967. Kuhlthau's (1991, 2004) formulation of her Information Search Process (ISP) model, identifying emotional thoughts common at each of its six stages, presented a significant step towards emotion and affect being stronger considerations in information science. Chatman's (1992, 1996) studies of marginalized populations also include affective facets. In 2007 Nahl and Bilal edited a volume of research on information and emotion, focusing on information behaviour research under an "emergent affective paradigm" (as the book was

subtitled), inspired by Kuhlthau's earlier work and discussions within the information behaviour research community (Nahl & Bilal, 2007). The importance of emotion and affect as part of studies of information is evident throughout Nahl and Bilal's book, a further review by Fourie and Julien (2014), and much of the literature on social media and online communities.

Broader literature on social support emphasizes both social and emotional considerations, defining it as "the resources provided by other persons" (Cohen & Syme, 1985, p. 4), including a range of psychological, physical, emotional, and informational help and support that others can provide through social ties (Caplan, 1974). Such support may be as simple as providing what Caplan terms a "sanctuary" of emotional comfort that alleviates stress (p. 6), or may inform and guide the gathering of data, information, and knowledge resources that will impact the "health and well-being" of the person(s) being supported (Cohen & Syme, 1985, p. 4).

Despite a breadth of research; "more than 40 information behaviour researchers" interested in an affective paradigm shift back in 2006 (Nahl & Bilal, 2007, p. xviii); and the importance of emotions, affect, and social and emotional support in user engagement, we have not seen adoption or integration of an emotional or affective paradigm at levels similar to the cognitive or social paradigms. Savolainen, revisiting emotions in information behaviour and practices eight years after Nahl and Bilal's (2007) book, found a "paucity of studies" on emotions and feelings, despite their importance, with continued "dominance of the cognitive approach" (Savolainen, 2015, Introduction section, para. 2). Fourie and Julien (2014) conducted further meta-analysis of the literature and positioned the affective paradigm as "still very much an emergent paradigm" even as they argued for its importance to information science research and education (p. 197). Our own searches in Google Scholar, Web of Science, and Library and Information Science Source for phrases related to cognitive, social, and emotional or affective paradigms in information science continue to back this up, as seen in Table 1. The number of papers invoking an emotional or affective paradigm (or related terminology) is no more than 12.8% of those invoking the cognitive paradigm and 13.3% of those invoking the social paradigm. Since efforts towards an affective paradigm and the social paradigm each arose in the 1990s (compare Kuhlthau, 1991, with the review by Sanfilippo & Fichman, 2014), the former could have developed to be as popular as the latter as of 2020.

That development has not advanced quite as far or as fast as social informatics and the social paradigm. Recent studies are good examples of adopting an affective paradigm to study

		Google Scholar	Web of Science	Library and Information Science Source
Cognitive	paradigm	916	37	12
	perspective	8,200	168	35
	approach	9,000	297	140
	informatics	2,290	1,712	6
<b>All cognitive phrases</b>		<b>20,200</b>	<b>2,194</b>	<b>187</b>
Social	paradigm	894	28	22
	perspective	5,810	110	30
	approach	2,640	91	23
	informatics	7,650	4,221	430
<b>All social phrases</b>		<b>16,800</b>	<b>4,448</b>	<b>504</b>
Emotional	paradigm	26	2	0
	perspective	542	14	2
	approach	576	4	3
	informatics	2	0	0
Affective	paradigm	447	9	16
	perspective	431	7	2
	approach	311	9	1
	informatics	3	0	0
<b>All emotional or affective phrases</b>		<b>2,240</b>	<b>45</b>	<b>24</b>

*Table 1.* Search results returned for three information science paradigms in scholarly databases. All searches conducted June 27, 2020 and restricted to information science-related literature. Numbers do not add to 100% within each paradigm due to overlaps.

online privacy from emotional perspectives (Sarabia-Sánchez, Aguado, & Martínez-Martínez, 2019), the impact of emotions in design evaluations (Bhandari, Chang, & Neben, 2019), social habit formation and affective sense of belonging (Liu, Shao, & Fan, 2018), the role of empathy in library services (Phillips, 2017), emotions in the information search process (Rasmussen Pennington, 2016; Platero Gómez & Ortoll Espinet, 2016), and emotions expressed in online information sharing (Savolainen, 2015), giving some truth to Hartel's (2019, Affective turn section, para. 3) statement that "the affective turn is here to stay." But these articles alone do not significantly develop an affective paradigm to similar depth as the social paradigm, nor does much research begin to significantly integrate social and affective paradigms together. For example, Savolainen's (2015) study of an online community and Rasmussen Pennington's (2016) study of searching for information based on emotion both acknowledge and take into account information sharing as social construction, but do not focus on the roles and

relationships of information and communication technology as part of the sharing process nor the nature of the online communities users shared within.

### **Socio-Emotional Online Engagement**

Information science research foregrounds informational considerations, and a given online community may be information-centric, but social, emotional, and affective considerations should remain in play. Online communities incorporate emergent social constructions, human emotion, personal relationships, and important social ties alongside information and knowledge seeking, sharing, use, and creation (Haythornthwaite, 2007; Tufekci, 2013; Wellman & Gulia, 1999). Social and emotional support and the social ties it relies on are important motivators of users' online information sharing (Ardichvili, 2008; Frost & Massagli, 2008; Kazmer & Haythornthwaite, 2001; McLure Wasko & Faraj, 2000, 2005; Worrall, 2019), including in motivating the asking and answering of questions on social Q&A sites (Choi et al., 2014; Kim & Oh, 2009; Worrall & Oh, 2013). Common motivations across social Q&A and social media sites include social interaction and engagement, social and cultural capital, social cognition, reciprocity, gratitude, altruism, empathy, communality or community interest, and enjoyment (Oh, 2012; Oh & Syn, 2015; Raban & Harper, 2008).

Social and emotional considerations may play a significant role for some users, topics, or types of communities but play a much lesser role for others, much as we see different preferences, structures, and characteristics in online communities. Five key characteristics of online communities under Jaeger and Burnett's (2010) theory of information worlds are (a) social norms, or how people agree on "the appropriateness ... of social appearances" (p. 22); (b) social types, or the roles people fulfil and are "socially defined" into (p. 22); (c) information value judgments; (d) a "full range of possible normative [information] behaviors" and practices community members may engage in (p. 23); and (e) boundaries where communities may contact each other and where "information exchange can—but may or may not—take place" (p. 8).

Some studies of online communities have addressed affective and emotional facets and the phenomena of social and emotional support and engagement, notably in health-related communities (Batenburg & Das, 2014; Costello, Martin, & Brinegar, 2017; Frost & Massagli, 2008; Kazmer et al., 2014; Rubenstein, 2015; Worrall & Oh, 2013). A few online community studies incorporate social informatics ideas while at least beginning to address socio-emotional considerations (in our judgment these include Costello et al., 2017; Kazmer et al., 2014;



Rubenstein, 2015; and Worrall, 2019). While useful in advocating for greater study of and furthering our understanding of emotions, social and emotional support, and other affective factors, these articles are still quite few and far between, and none represent significant development and integration of an affective paradigm alongside the social paradigm. In this paper we look to begin to fill this gap and to argue for stronger and more integrated considerations of emotional and affective facets alongside social ones in information science research: a *socio-emotional* paradigm.

### Methods

The study reported here examined the online social Q&A community of Stack Exchange (stackexchange.com), specifically its Academia section (academia.stackexchange.com). Stack Exchange is a large and popular social Q&A site with over 3.2 million questions, 3.5 million answers, and 13.6 million comments posted each year. The Academia section of the site (hereafter *Academia SE*) is moderate in size, with over 34,000 questions, 81,000 answers, just over 100,000 users, and about 20,000 visitors per day (Stack Exchange, 2021a, 2021b).

### Research Questions

The broader research study intended to address two exploratory research questions, focused on the social and emotional motivations of Academia SE users:

1. What social and emotional factors motivate users to ask questions, answer questions, and share information with other users on Academia SE?
2. Of these factors, do any contribute to the coherence of community, social norms, social types, information values, and information behaviours among users of Academia SE, and if so, how?

In this paper we present a narrower scope on our findings from both research questions.<sup>1</sup> The later narrative in the Findings section, organized around a set of the motivational factors we identified under research question 1 above, is focused on addressing an additional question that developed from the two above during our research:

3. How do particular motivations of users, in their contributions to the coherence of community, social norms, social types, information values, and information

<sup>1</sup> Other elements of our findings were presented at the Canadian Association for Information Science (CAIS) conference (Worrall, Cappello, & Osolen, 2018).

behaviours among users of Academia SE, emphasize the interrelationships between different social, emotional, and informational considerations in information sharing in the context of the Academia SE site and online community?

### **Data Collection and Analysis**

Three mixed methods led to a well-rounded data set to describe users' motivations, use, and Academia SE as an online community. First, we collected 100 Academia SE questions and their associated answers and comments, sampled at random from 1,000 recent questions, for a total of 100 questions, 222 answers, and 904 comments on those questions and answers. Content analysis procedures had all three authors code this data for (a) socio-emotional motivations for sharing information, taken from the literature and as emergent in the data; (b) cases of information sharing; and (c) the presence of social norms, social types, information values, and boundaries, as informed by Jaeger and Burnett's (2010) theory of information worlds. Second, we conducted a survey of Academia SE users, asking them about these same motivations and characteristics through a set of Likert scaled questions. Forty-eight users of the site responded to the survey. Third, 12 of these users participated in follow-up semi-structured online interviews, offering details of their specific and general experiences in using the Academia SE site, including their questioning and answering, motivations to share and participate, and if and how they saw the site as a community. Interviews were coded as per the content analysis data. Our approach was most informed by social informatics research and by research under an emotional or affective paradigm; this integration helped us begin to fill the gap in existing information science research identified earlier in this paper.

Throughout data analysis we followed an inductive and iterative approach (Ahuvia, 2001; Bradley, Curry, & Devers, 2007) broadly similar to grounded theory (Strauss & Corbin, 1994), but with codebook development equally informed by both our data and the literature. We co-developed our codebook, including establishing categories for motivations from the literature alongside codes informed by the theory of information worlds (Jaeger & Burnett, 2010), during the first half of the analysis; however, we did not limit ourselves to these categories and codes at any stage of analysis, with open coding of any emergent motivations or phenomena welcomed throughout. The resulting approach combined a pre-existing and pre-developed codebook with open coding of emergent findings, allowing for identification of motivations both addressed and unaddressed in previous literature. We engaged in constant discussion and comparison of our

coding and any similarities and differences we uncovered, and overlapped analysis segments to help ensure the qualitative trustworthiness and validity of our process (Lincoln & Guba, 1985). When subtle differences existed, these minor differences were resolved through further discussion to obtain agreement on our findings.

### **Potential Limitations**

Users who completed the survey and interviews were broadly representative of users with different levels of use of and roles in the site, although were self-selected and could indicate a potential limitation in the sample's representativeness. Sample sizes for the survey and interviews were also limited and do not permit quantitative generalizability; we used the survey only as potentially informative and descriptive alongside our other data, and did not apply inferential statistics to its results. Nonetheless, we believe the broad data set provides for good representation of users' activities and of Academia SE as an online community. While our findings are only directly generalizable to Academia SE itself, we believe our findings do have significant potential transferability, qualitatively, beyond the site and academic domain to other social Q&A sites and other types of online communities. Nonetheless, our experiences and knowledge of the research literature encourages caution, since other online communities will not necessarily share the same characteristics as Academia SE.

### **Findings**

We identified seven categories of socio-emotional motivations most influencing the information sharing of Academia SE users. As mentioned above, this paper focuses on findings and categories related to interrelated informational, social, and emotional considerations in sharing, organized around four motivations that were uncovered through our data analysis: communality, self-efficacy, enjoyment, and an emergent lack of empathy. The first three were included in our pre-developed codebook, while the fourth emerged from open coding of our research data. We present these without classifying them further, given there are interrelations between the informational, social, and emotional facets they represent. As required and requested by Stack Exchange under its Terms of Service and Creative Commons Attribution ShareAlike licensing, users whose questions or answers are quoted from our content analysis are identified in this section, with direct URLs given as citations. Survey and interview participants are identified by pseudonyms, under the usual research norms of confidentiality.

### **Communality**

We found many users shared because they wanted to be integrated and acculturated into academic communities, while others shared for altruistic reasons and looked to encourage the academic community. Explicit statements of this communality in questions, answers, and comments were not the norm; one of the few examples came from user “Martin Plávala,” who prefaced an answer he posted with the note “I will share my story as I hope some people might find it insightful” (<https://academia.stackexchange.com/questions/72784>). Multiple interviewees later shared that the site’s management and moderators encouraged an information-centric view, which may have influenced the relative lack of posts with explicit communality.

Statements of communality and altruism, with stronger consideration of social facets of the online community, did emerge from our interviews. An excellent example comes from Frank, who believed Academia SE should encourage acculturation and act as informational support for others:

“Generally, sort of trying to increase the transparency about how all these convoluted systems work in academia is a good thing .... [H]aving things down, a sort of permanent record of this is how things actually work, that people can refer to, seems like a general good for the world. ... The discussions ... are grounded in the overall sense that we’re trying to identify ... and shed light on the processes for everybody.” (Frank)

Daniel was explicit about encouraging common understanding: “Part of my motivation has to do with fostering a sense of commonality, camaraderie ... it’s definitely something that I want to happen ... [including] in real life.” Others were less explicit but still desired this same common understanding, such as George’s comment that participating in Academia SE “broadens your horizons and that gets you together to find common understandings, motives, in academia.”

### **Self-Efficacy**

Many users were motivated to share their knowledge and understanding of academia with others. In some cases of questioning and answering seen in our content analysis, users were motivated by ego instead of anything social or empathetic. For example, user “AngusTheMan” stressed their contributions in relation to a paper they looked to publish: “My supervisor wants to put someone else as first author ... when I have done most of the work on both. What should I do?” (<https://academia.stackexchange.com/questions/75175>). Here AngusTheMan shows a bias towards their perspective on the authorship of this paper, to the point of active disagreement with their supervisor. In another question, a user wanted to know if one could conduct research in a field without needing to teach. Part of an answer posted by user “Dmitry Savostyanov” could

have been interpreted as biased, lacking nuance, and egotistical: “Looking for a research-only career in a University can be much more challenging” (<https://academia.stackexchange.com/questions/77253>). The user asking the question may have known it would be challenging already and have preferred an answer displaying greater empathy towards their dislike of teaching.

Interviewees shared experiences where self-efficacy was better evidenced and took into account multiple perspectives, including informational, social, and emotional views. This was something Louise valued, stating Academia SE “brings people from very different backgrounds, from the entire world, [together in] answering questions... it opens up the answer and the views someone can have.” Others, such as Ajay, stressed they took an inclusive approach in reading the site: “I try to filter out all the implicit or explicit biases coming from others’ opinions. I try to understand others, especially the asker’s perspective.” Such approaches were constructive in expressing self-efficacy and understanding it in others without feeling a need to defend one’s own expertise.

### **Enjoyment and Value**

We found enjoyment motivated many users who had an ongoing interest in sharing. These interests went beyond being informational in nature, despite Academia SE moderators and management encouraging an informational purpose above all else. Due to the latter this was, again, less evident in the content we analyzed from the site, but many interviewees offered clear expressions of enjoyment:

“I do get a lot of satisfaction from being able to guide students, to mentor students ... [Academia SE has] actually been useful professionally, not just rewarding socially.”  
(Frank)

“I thought it would be an interesting way to share all the fun and not so fun things that go on in grad school. ... It’s a fun side distraction.” (Dave)

“My interest is not purely academic in the colloquial sense ... [Academia SE] may also have practical value [for me].” (Brian)

“I understood there is much more to this site than just putting down my questions ... and I decided that it’s a very nice play to stay. ... It was the first time ever in my life when I started thinking positive about the possibility of spreading my ideas over the Internet.”  
(Stoyan)

Frank, Dave, Brian, and Stoyan all found participating in asking and answering questions to be enjoyable, and for practical, informative, and socially and even emotionally pleasing reasons, the latter especially seen in Dave’s “fun” and Stoyan’s inherent positivity.

Other interviewees did not enjoy the socio-emotional elements, but nonetheless valued Academia SE for its focus on informative answers. For example, Kevin commented he “value[s] it for its impersonal attitude,” and shared further that “it’s the question that’s interesting, not the person,” a view illustrative of the views of frequent participants and of the site’s moderators and managers, based on comments from many of our interviewees. George agreed: “It’s not really about the users, it’s about the content created ... You focus on the content and the quality of that content.” Dave also agreed: “The questioner is merely a person with a question. ... [Questions should be] more general, so that the next [person] that asks the same question can get an answer as well.”

### **Lack of Empathy**

Perhaps most significant for the current paper, we found a lack of empathy emerged as a motivation from the data. Some answers posted on Academia SE were coupled with unnecessary sarcasm, bitterness, and sometimes with circumstantial evidence, despite the desire for communality, enjoyment, and careful self-efficacy from others. The most evocative example of this came from the following exchange between questioner “user3052817,” who identified as a late-stage PhD student, and answerer “JeffE”:

[Q:] How do I tell my advisor that group meetings may be too time-consuming...?  
[A:] Directly, as if they were an adult human being instead of a soul-sucking demon.  
(<https://academia.stackexchange.com/questions/76527>)

While JeffE’s answer is perhaps intended to encourage the student to speak with their supervisor and not be afraid, its phrasing lacks an empathetic tact that could have been helpful given concerns expressed by the student in the question. Other users judged JeffE’s answer as “dreadful advice” (“Nicole Hamilton”) and felt “there might be more tactful ways to suggest improvements” (“Nate Eldredge”), stressing the socio-emotional side of the community, but nonetheless it was voted the second most popular answer to user3052817’s question (<https://academia.stackexchange.com/questions/76527>).

Interviewees expressed discomfort with the lack of empathy in some answers and, at times, of the broader Academia SE community or academia as a whole. Many reacted to our follow-up questioning by stating they modelled greater empathy and altruism in their participation:

“I wanted to ‘pay it forward’ by helping others.” (Maya)

“There are a lot of particularly high reputation users that do not realize that low reputation users do not know all the rules. ... But you have to accept this and guide them along.” (Brian)

Others, including less frequent users, stressed emotional and empathetic considerations were a natural part of what was drawing many, including in some cases themselves, to participate in Academia SE in the first place:

“On Academia [SE], a lot of it has to do with emotions and handling difficulty, psychological difficulty, social challenges, interpersonal issues.” (Daniel)

“Whenever I notice someone in their question indicating that they are overwhelmed ... I immediately relate to my similar feelings in the past and feel a strong urge to help, somehow.” (Frank)

A further example of a desire to “do good” comes from Louise, who in the context of questioning on her values and motivations stated one motivation for her participation was “my desire to defend the oppressed, maybe?” and followed-up that she was “really more drawn to the questions of people suffering injustice.”

### **Tension: Informational or Socio-Emotional**

Louise’s comment, juxtaposed with content we observed and other interviewees’ answers, evidences a wide range of values and beliefs about academia and Academia SE’s purpose. While many of the motivations we identified for sharing were interrelated and connected informational, social, and emotional facets together, there was resulting tension between users who would prefer the site keep a pure informational focus and users who believe social, emotional, and affective considerations needed to be foregrounded. Maya, Daniel, Brian, Frank, and Louise all fell to various degrees into the latter group, while others such as Kevin and George fell into the former group. Academia SE moderators and managers, and many users with significant experience and high reputation on the site, placed strong value in the site remaining an informative and on-topic resource beyond the life of one question-and-answer interaction. The survey indicated these coherent social norms in translating meaning and understanding into a community resource maintained over time, but spoke to a clear lack of coherence in what the site should be valued for. Even some interviewees who preferred an informational focus shared views wary of too much groupthink:

“Sadly, all Stack Exchange sites are polluted in a good amount of social conformity ...; moderators and high-reputation users try to select those ones who behave like themselves, and try to make all the other users like them. This reduces the diversity of thought.” (Ajay)

Further experiences shared by Joe and Daniel further stressed the tensions at play impacting the nature, coherence, and success of Academia SE as a community:

“They close a lot of questions by rule... for asking for opinions, or shopping lists, but many seem perfectly reasonable.” (Joe)

“...the same question was put on hold as ‘unclear what you’re asking.’ And to me it was pretty clear what he was asking, even though I might have added a layer of emotional interpretation, so to speak. ... I think it was in the question and in the reality of academia, but at least several users did not think the same.” (Daniel)

## Discussion

### Community Coherence or “Fit”

Our findings speak to the importance of a range of online community experiences, where some online communities will focus on information as their main purpose, while others may emphasize social interaction, and yet others the ideas of social and emotional support. But the experiences shared by many of our interviewees speak to *any* online community needing to consider informational, social, and emotional factors and the differing values of users of these; and an inability for community moderators and information science researchers to ignore any of these. Coherence can be too strong and lead to groupthink (Tsikerdekis, 2013), but not having enough coherence can lead to values becoming unclear, users disagreeing with what the site and community should be, and the site’s failure as a boundary object (Star & Griesemer, 1989). This is seen in the range of beliefs and values of our interviewees and the various approaches to sharing content they have. For example, we expect Louise’s answers to questions would differ from Kevin’s, and their desires in the kind of online community they would like to participate in differ. As seen in earlier research on LibraryThing and Goodreads (Worrall, 2019), social media (Oh & Syn, 2015), online health communities (Kazmer et al., 2014), and in socio-technical infrastructure literature such as Star and Ruhleder’s (1996) classic, balanced structural strength and careful negotiation of norms and values are needed since online communities act as boundary objects (Star & Griesemer, 1989). The “fit” for one user may not be the same as for another, and the same online community, even as it remains information-centric, may not fit the preferences of all it would like to serve. We would encourage and are pursuing further research into online communities as boundary objects and how they cohere or “fit” for different users and in different situations, following a socio-emotional paradigm.



### **Integrating Emotions and Affect**

Many online communities focused on health prioritize social and emotional concerns over informational ones (see e.g. Frost & Massagli, 2008; Worrall & Oh, 2013). Our findings indicate most Academia SE users, in comparison, place a stronger focus on informational motivations, or in some cases on both informational and emotional facets. A social informatics-informed study of Academia SE, as this research set out to be, could be construed to encompass the nature of this site and its community, and one would believe it to describe users' motivations and the resulting community well. However, because we showed intentionality in studying social, emotional, and affective facets, and resulting sensitivity to social and emotional motivations established in the literature and emergent in our data on Academia SE, we unearthed emotional and affective concerns often left unexpressed or at least unexplained in the site's actual content but that came through from careful questioning and follow-up in our interviews. Academia SE may be positioned, used, and even quite successful as an information-centric resource and online community, but we found many users—including a significant minority of our interviewees—are not comfortable with this positioning, and still others have at least some concern with the information sharing practices of other users. If we had not tried to integrate social and affective paradigms into a broader socio-emotional paradigm, we might have missed these concerns or downplayed them in our understanding of Academia SE. Adapting our use of the social paradigm and social informatics, evolving in and of itself (Sanfilippo & Fichman, 2014; Fichman, Sanfilippo, & Rosenbaum, 2015), to intentionally incorporate the emotional and affective paradigm allowed us to better understand these perhaps surprisingly prevalent and significant facets of the Academia SE online community as an informational, socio-emotional, and socio-technical space.

Of course, ignoring these same concerns in other communities or for other users, with even stronger socio-emotional components, could have been problematic for painting a true picture of those communities. The emotional and affective facets of online health communities like PatientsLikeMe (Frost & Massagli, 2008; Kazmer et al., 2014), the breast cancer community studied by Rubenstein (2015), or even drug users on Reddit (Costello et al., 2017) strongly shape the social norms, social types, information values, and information behaviours and practices of these communities, in ways speaking to their information worlds (Jaeger & Burnett, 2010) being shaped by individual, social, *and* emotional factors. Community phenomena and characteristics

are driven by users' emotions alongside being socially informed. We do not deny emotions, affect, and empathy are often social constructions, and social informatics and a social paradigm should still greatly inform any discussion of a community's coherence; its common norms, values, and behaviours; its ability to understand and get along with one another at least enough of the time; and its overall success as an infrastructural boundary object (Star & Ruhleder, 1996). Given social and emotional support and social ties are important motivators for many users, even in non-health related online communities (Ardichvili, 2008; Kazmer & Haythornthwaite, 2001; McClure Wasko & Faraj, 2000, 2005), our approach to researching online communities and the roles and relationships of technologies in the lives of users and user communities *must* be informed by *both* social and emotional facets. This implication has transferability beyond studies of online communities to other socio-technical studies within social informatics and beyond.

### **A Socio-Emotional Paradigm**

As we have stated elsewhere (Worrall, Cappello, & Osolen, 2018), our findings require we further consider, in research and practice, the balance between empathetic and socio-emotional considerations vs. informational ones in social Q&A sites and other online communities. But our study and other research which has begun to bring social and emotional considerations together (Costello et al., 2017; Kazmer et al., 2014; Nahl & Bilal, 2007; Rasmussen Pennington, 2016; Rubenstein, 2015; Savolainen, 2015) point towards an integrated *socio-emotional* paradigm. A preliminary and informal model of an integrated socio-emotional paradigm is shown in Figure 1, illustrating the influence and inclusion of elements of the existing social and emotional or affective paradigms combined together. Such a paradigm could increase our focus on engagement, support, and information sharing and their interrelations; should consider the coherence or "fit" of those facets and the communities users are part of; and will serve as a needed integration of social, emotional, and informational facets.

An integrated socio-emotional paradigm would be beneficial both in online community research and for broader research in social informatics and elsewhere in information science where we see further indications of the importance of socio-emotional factors. For example, information scientists have identified human, social, and emotional ties, as supported and facilitated by technology and online and offline communities, as significant for immigrants in their successful migration and settlement (Andrade & Doolin, 2016; Komito, 2011; Mehra & Papajohn, 2007; Worrall, Ballantyne, & Kendall, 2019). Others have stressed the key roles of

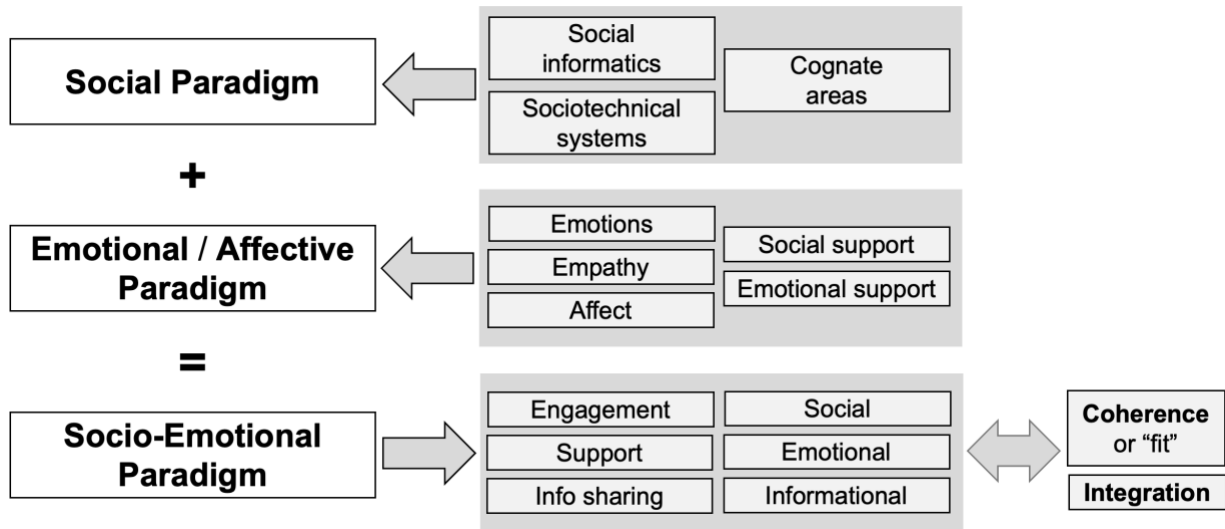


Figure 1. A preliminary and informal model of an integrated socio-emotional paradigm for research in information science.

emotion and affect in maker culture (Toombs, Bardzell, & Bardzell, 2015), the affective information behaviour and practices of multiple groups in many different contexts (Kuhlthau, 1991, 2004; Nahl & Bilal, 2007; Rasmussen Pennington, 2016; Savolainen, 2015), and broader human decisions, activities, and behaviours influenced by affect (Zhang, 2013) inclusive of human-computer interactions and information retrieval (Lopatovska & Arapakis, 2011). Such an integrated paradigm can further the evolution of social informatics (Sanfilippo & Fichman, 2014; Fichman, Sanfilippo, & Rosenbaum, 2015) and the development of the varied paradigms, approaches, perspectives, and “turns” of information science (Hartel, 2019).

Support for an affective and emotional research paradigm in information science appears quite strong, but always bubbling under. It should rise to the surface to be integrated with the social paradigm, and social informatics and information science researchers should consider adopting a resulting socio-emotional paradigm including informational, social, and emotional considerations as part of its assemblages, infrastructures, models, theories, and approaches. We stress we are not calling for a full-scale Kuhnian paradigm *shift*, as we do not wish to throw social facets to the wayside or risk downplaying them in the future in the same way emotional and affective concerns may have been in the past. Researchers from social informatics and cognate areas have argued for over 20 years that we cannot ignore social aspects of information,

information technology, and information science (Kling, 2007; Kling, Rosenbaum, & Hert, 1998; Kling, Rosenbaum, & Sawyer, 2005; Sawyer & Jarrahi, 2014), and we remain in strong agreement with them. But adopting this one paradigm, always and forever, may leave out emotional, affective, and empathetic considerations at play for many users, many online communities, and many cases of information seeking, sharing, and exchange online. We find ourselves in agreement with Hartel's (2019) call for new "turns [to] rattle and stretch a paradigm and capture the imagination" (Conclusion, para. 1) and with Bates's (1999) acknowledgement of the multiple perspectives required in information science research. Be it as perspectives, approaches, metatheories, turns, or paradigms, we encourage an *integration* of affective and emotional considerations alongside the existing social facets represented by social informatics, and intend to adopt such a socio-emotional paradigm in further research on information-centric online communities.

A socio-emotional paradigm, and our work and other recent literature, imply care must be taken in the design of and information practices within online communities and similar socio-technical systems. In the present study we see the importance of balancing the coherence or "fit" of the technology the community uses, as a boundary object (Star & Griesemer, 1989), against the potential for groupthink (Tsikerdekis, 2013). The strong emphasis on information-centric uses by Academia SE administrators and moderators conflicted with the existing social norms and information values of some users towards social and emotional support. The positioning of an online community as a support resource must be made clear in design and practice, since roles as an informational repository, a place for facilitating and supporting social ties, a place for social and emotional support, or that vary in different contexts are all possible intentions and interpretations (Batenburg & Das, 2014; Rubenstein, 2015; Worrall, 2019). The community may also be a nested information world, within a broader world with its own influential norms and values, as is true for Stack Exchange sites, Reddit subreddits (Costello et al., 2017), and LibraryThing and Goodreads groups (Albrechtslund, 2017). Designers, moderators, and users alike must remember every community is different, and have the opportunity to learn about and negotiate these differences in characteristics (Jaeger & Burnett, 2010), as is echoed in previous research and scholarship (Albrechtslund, 2017; Costello et al., 2017; Preece & Maloney-Krichmar, 2003; Worrall, 2019). System design and community structure must be carefully considered, as the relative success of the system-as-boundary-object significantly impacts the

informational, social, and emotional support motivated and shared within a community (Kazmer et al., 2014; Star & Ruhleder, 1996).

Given the limitations of our study, further theoretical and empirical support is needed to continue development of an integrated socio-emotional paradigm beyond the informal model shown in Figure 1 and to consider other implications for design and practice. Upcoming research and scholarship by the first author will continue this development in connection with the online community and social informatics research spaces, and we wholeheartedly encourage and recommend further such research and scholarship across information science.

### **Conclusion**

Drawing on new research findings and the existing research literature, we have argued for adopting an integrated socio-emotional paradigm in information science, and especially in social informatics studies of online communities. Such a paradigm will allow us to balance the various considerations that go into why and how people interact in, share with, and become part of online communities. Even in the context of an information-centric online community, we expect at least some users will be looking for social and emotional support, or at least would like to see it valued and appreciated as part of the community's values. If coherence is not balanced and concerns remain hidden, then the community may not be successful for them and in its information-centric, boundary-spanning mission. Instead of prioritizing solely a cognitive perspective, or a social one, critical research of online communities must be inclusive of a range of experiences, including emotional, affective, and empathetic aspects, and must continue to develop theories, perspectives, and empirical findings supporting this range and our understanding of online communities, other socio-technical systems, and other phenomena in information science. Our findings and other research studies reviewed in this paper show how information science can benefit from such a multiplicity of ever-evolving perspectives (Bates, 1999; Hartel, 2019; Sanfilippo & Fichman, 2014), integrating a socio-emotional paradigm recognizing the importance of emotion and affect in studying information and information technologies, their roles for, and their relationships with users, communities, and society.

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